دانشگاه فردوسی مشهد

دانشکده کشاورزی

پرورش بز

(Goat Science)

تهیه و تنظیم

رضا ولی زاده

۱۳۸٦



پرورش بز

تعداد واحد:۲
نوع واحد: ۱ واحد نظری – ۱ واحد عملی
پیشنیاز: اصول تغذیه دام و اصلاح دام

سرفصل درس:
نظری:

۱- مقدمه
۲- سیستمهای مختلف پرورش بز در ایران و جهان
۳- مشخصات نژادهای مهم بز (با تأکید بر نژادهای بومی)
٤- تولید مثل و عوامل موثر در آن
٥- اصلاح و بهبود بز با توجه هدف تولید
٦- روشهای مختلف گله داری
۷- خوراک دادن با تاکید بر تغذیه بز در مرتع و استفاده از بقایا
۸- تولید گوشت، شیر، مو و کرک
۹- ساختمانها و تاسیسات

سرفصل درس:

عملی:

۱- مقید کردن

۲- تعیین سن و قضاوت ظاهری در بز

۳- چیدن کرک و مو

٤- رکورد برداری و علامت گذاری

٥- عملیات بهداشتی

٦- تهیه پروژه

منبع:

. Sheep ۲1. Ensminger, M.E. and Parker, R.O. 200 and goat science. The Interstate printers and publisher, Danville, I llinois, USA.

2. Mackenzie, D. 1980. Goat husbandry, Faber and Faber, London, UK.

۳- توکلیان، ج. ۱۳۷۸. نگرشی بر ذخائر ژنتیکی دام و طیور بومی ایران. موسسه تحقیقات علوم دامی کشور، کرج، ایران

٤- ولی زاده، ر. ۱۳۸٦. پرورش بزهای شیری.انتشارات دانشگاه فردوسی مشهد شماره ۲۰۸.

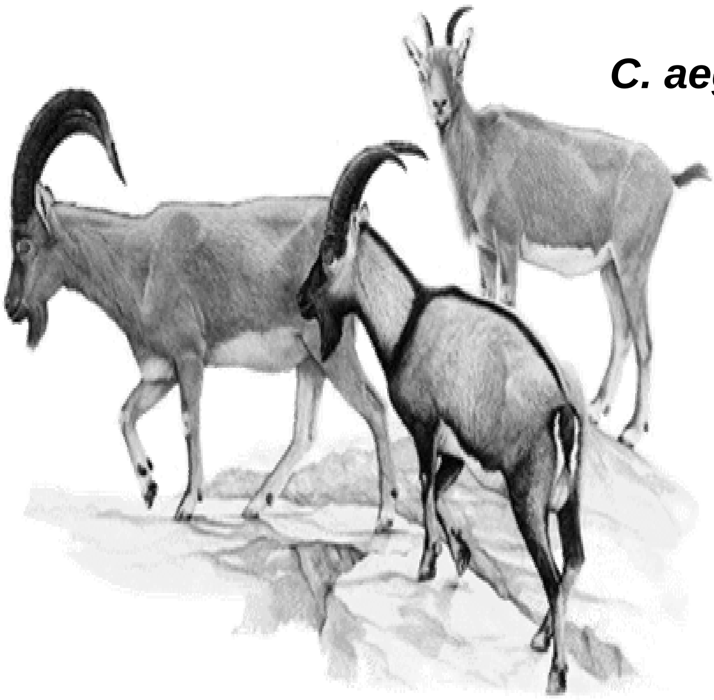
بز = حیوانی است علفخوار از نوع گوسفند، دارای شاخ و ریش دراز و دم کوتاه، بدنش از موهای دراز پوشیده شده

از آثار باستانی موجود در آسیا حدس زده می شود که بز از جمله دامهائی بوده که حدود ۶۰۰۰ – ۷۰۰۰ سال قبل از میلاد حضرت مسیح (ع) در همین منطقه اهلی شده است.

جایگاه بز در طبقه بندی جانوری

(Animalia)	جانوری	(Kingdom)	سلسله
(Chordata)	طناب داران	(phylum)	شاخه
(Vertebrata)	مهره داران	(Subphylum)	زیرشاخه
(Mammalia)	پستانداران	(Class)	رده
(Ungulata)	سم داران	(Subclass)	زیر رده
(Artiodactyla)	زوج سمان	(Order)	راسته
(Ruminantia)	نشخوارکنندگان	(Suborder)	زیر راسته
(Bovidae)	تهی شاخان	(Family)	خانواده
(Capra)	بز	(Genus)	جنس
		(Species)	گونه
	C. hircus		۱- بز اهلی
	C. falconeri		۲- بز وحشی شبه جزیره هند
	C. aegagrus		۳- بز وحشی آسیا و اروپا
	[illegible]		[illegible]

C. aegagrus



C. falconeri



گوسفند
جنس *ovis*

گونه:
۱- گوسفند اهلی *O.Aries*
۲- گوسفند وحشی (موفلون آسیائی) *O. Orientalis*
۳- گوسفند وحشی (موفلون اروپایی) O . *Musimon*
٤- گوسفند وحشی (اورال آسیائی) *O. vignei*

منشاء

هرچند منشاء بزهای امروزی بدرستی مشخص نیست، اما شواهد مرفولوژی مقایسه ای و آزمایشات تولید مثلی موید موارد زیر است :

- **بز *C. Aegagrus* یا Bezoar**
- **در ایران و آسیای صغیر منشاء عمده بزهای اروپا و آسیا**
- **بز *C. Falconeri* از کوههای هیمالیا منشاء بزهای شبه جزیره هند با عنوان Markhor**
- **بز *C. Prisca* سواحل مدیترانه**

بز آنقوره Angora از تلاقی بزهای زیر ایجاد شده است

C. aegagrus × *C. falconeri*

مقایسه برخی از خصوصیات گوسفند و بز

نوع خصوصیت	بز	گوسفند
پوشش بدن	مو و کرک	پشم
دم	کوتاه، معمولا عمودی	بلند به طرف پائین
تعداد کروموزومها (عدد)	٦٠	٥٤
هوش	بیشتر	کمتر
حساسیت به شوک و استرس	بیشتر	کمتر
مقاومت در مقابل کم آبی	زیاد	متوسط
عادات خوراکی	تغذیه از بوته ها، درختچه ها	علوفه مراتع سرشاخه خواری کمتر
پراکندگی چربی	بیشتر در محوطه بطنی	زیرپوست و دنبه
گلبولهای کوچک شیر	درصد بالا	درصد کم
ذات الریه	حساس	حساسیت کمتر
سم	توخالی و اسفنجی	مسطح و یکنواخت



Physical Characteristics

- The goat is a small ruminant, weight varies between breeds and between bucks and does. Large breeds may weigh up kg, small dwarf breeds 25kg.80to
- Goats have a rapid reproduction rate, in good conditions females can produce their first kids at 15 - 18 months, and thereafter every 8 months. Multiple births are common.
- The structure of the digestive system, and rate of passage allow goats to digest poorer quality forage than sheep or cattle.
- Goats are able to extract the majority of the water content of feeds, increasing their tolerance to drought.

Comparisons with Other Ruminants

- Goats prefer shoots and leaves to stems and a variety of available vegetation.
- When first turned out in the morning, goats will graze unselectively, but will become more selective during the day.
- Goats scatter and graze and browse individually unlike sheep which graze in groups.
- They can stand on their hind legs and climb some trees, reaching vegetation 1.5 – 2 metres from the ground.
- Goats favour grasses and legumes in rainy seasons, and trees and shrubs in the dry season.
- Stall fed goats may spoil and refuse a lot of the forage provided if not carefully managed.

Comparisons with Other Ruminants

Species	Natural Feed Resources	Specific Abilities	Feed Intake Behaviour	Impact on Environment	Impact of Prolonged Exposure
Goats	Young lvs + sprouts of grass, shrubs + trees. Pods + Seeds	Small beck, strong jaws, sensitive lips can stand on hind legs and climb.	Select bark, young lvs + sprouts from standing (thorn) shrubs + trees.	Eliminate young trees + shrubs	Standing hay old shrubs + trees
Sheep	Young lvs + sprouts of grass + herbs Pods + Seeds	Small beck, sensitive lips strong legs long distance runners	Select young lvs + sprouts from standing vegetation. Can cover large area.	Elimination of perennial grasses	Standing hay annual grasses scattered shrubs + trees
Cattle	Young, mature + dry grasses. Straws	Sensitive tongue + smell. Large beck	Select palatable sp. Avoids dung patches. High intake/bite.	Eliminate palatable sp. Formation of cattle tracks + open spaces	Bare soil on tracks Open spaces with non palatable grass, herbs + shrubs.

Livestock numbers of the world:

Livestock	1975	2000
Geese	62,777,000	234,680,000
Ducks	295,953,000	884,532,000
Rabbits	180,143,000	474,828,000
Chickens	5,913,474,000	14,446,913,000
Goats	403,923,631	720,007,792
Sheep	1,046,298,160	1,057,908,000

جمعیت بز کشور (راس) سال ۱۳۸۴

کل کشور	۲۵/۸۰۷/۰۰۰
خراسان رضوی	۱/۶۱۱/۹۰۰

واحد دامی
(Animal unit)

واحد سنجش و مقایسه دامها با یکدیگر است و براساس مقدار مصرف خوراک یا انرژی مصرفی محاسبه می گردد.

الف – مقیاس جهانی:

ب – مقیاس ایران

نوع حیوان	ضریب واحد دامی
۱ گاو بالغ با یا بدون گوساله	۱
۱ گاو نر بالغ	۱.۳
۵ میش بالغ با یا بدون بره	۱
۵ قوچ بالغ	۱.۳
۷۵ مرغ تخمگذار یا اجداد	۱
۶۵۰ جوجه گوشتی ۸ هفته ای	۱
گاو اصیل	۹.۵
گاو دو رگ	۶.۵
گاو بومی	۴
گاو میش	۶.۵
گوسفند	۱
بز	۰.۷۵
تکسمیان	۴.۵

جمعیت بز براساس واحد دامی

کل کشور 19355250 درصد از کل کشور 15.4

خراسان رضوی 1208925 درصد از کل کشور 1

بیشترین جمعیت بز کشور به ترتیب در استانهای زیر وجود دارد:
فارس، خراسان رضوی، لرستان، کرمان، خراسان جنوبی، خوزستان، سیستان و بلوچستان

پراکندگی ۱

عرض جغرافیایی

گوسفند ۳۰-۴۵ °S و ۳۵-۵۵°N

بز ۰-٤۰ °N

نواحی حاره ای و نیمه حاره ای و عمدتا کشورهای توسعه نیافته، تراکم زیاد در حد فاصل خط حائل بین بنگلادش، هند، پاکستان، ایران، ترکیه، سوریه، کشورهای شمال آفریقا، اتیوپی و ساحل عاج

جمعیت گوسفند آسیا و آفریقا حدود ٤۳.۱٪ کل جمعیت گوسفندان دنیا

جمعیت بز آسیا و آفریقا حدود ۸۸٪ کل جمعیت بزهای دنیا

پراکندگی ۲

منطقه	گوسفند (٪)	بز(٪)
آفریقا	۱۷	۳۲
آمریکای شمالی و مرکزی	۱.٦	۳
آمریکای جنوبی	۹.۳	٤.٤
آسیا	۲۸.۵	٥٦.٤
اروپا	۱۱.۹	۲.۸
اقیانوسیه	۱۹.۵	۰
روسیه و کشورهای تازه استقلال یافته	۱۲	۱.٤

محاسن پرورش بز:

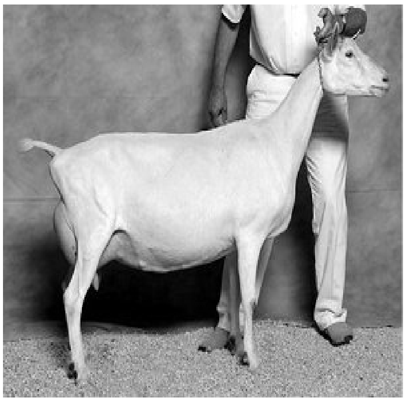
۱- قدرت سازگاری و تطابق با شرایط گرم و خشک
۲- تولید مثل با باروری بیشتر
۳- عدم نیاز به سرمایه گذاریهای زیاد
٤- عدم نیاز به جایگاه و تجهیزات پر هزینه و مدرن
٥- تنوع در تولیدات
٦- سهل الهضم بوده شیر بز
۷- مقاومت به بیماری سل
۸ – دارای چربی کمتر در گوشت
۹ – هضم مواد خشبی بهتر از گوسفند و گاو
۱۰- تمایل به سرشاخه خواری (هرس طبیعی)
۱۱- مقاومت به کم آبی
۱۲- زودتر به مرحله شیردهی رسیدن (سن ۱۷-۱۵ ماهگی)

معایب پرورش بز
۱- نیاز به نیروی کارگری زیادتر
۲- حساسیت به سرما، ذات الریه، شوک و استرس
۳- طعم و بوی شیر بز چندان مناسب نیست
٤ – تخریب مراتع

نژادهای بز جهان	شیری	سانن
		توگن برگ
		نوبیان
		آلپاین
		جامناپاری
		دمشقی
		انگلونوبیان
	گوشتی	بوئر
		بنگال
	موئی	آنقوره
		کشمیر



Saanen

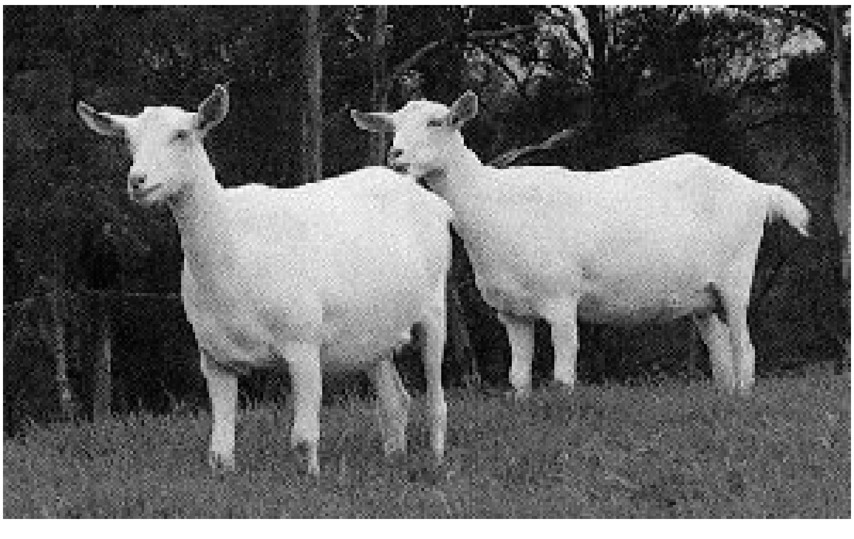




■ منشا بز سانن از دره سانن (Saanen Valley) در شمال غربی کشور سوئیس است

- سانن در بین نژادهای اصلاح شده دارای بیشترین گسترش است
- از سوییس به اغلب کشورهای دنیا صادر شده است
- در اغلب کشورهای دنیا از تلاقی آن با بزهای بومی نژادهای جدیدی به وجود آورده اند

(British) Saanen



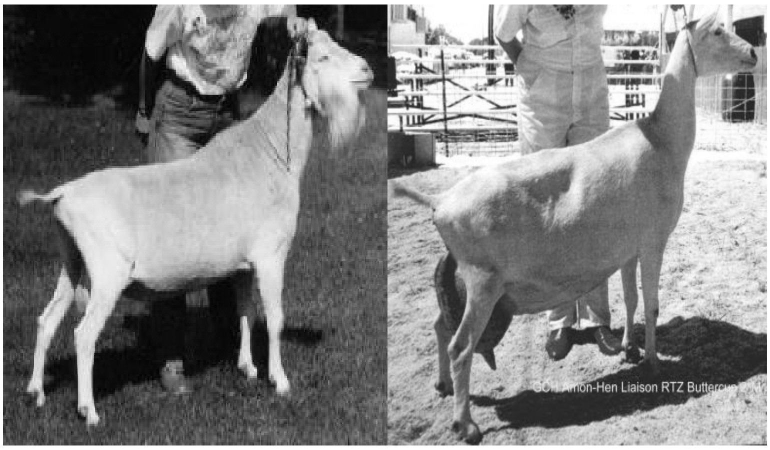
- جزء بزرگترين نژادهای بز شيرده است
- بيشترين مقدار شير را توليد مي كند
- دارای قدرت تحمل مناسبی است
- گسترش زيادي درسطح مناطق حاره ای و ساير نقاط دنيا دارد.

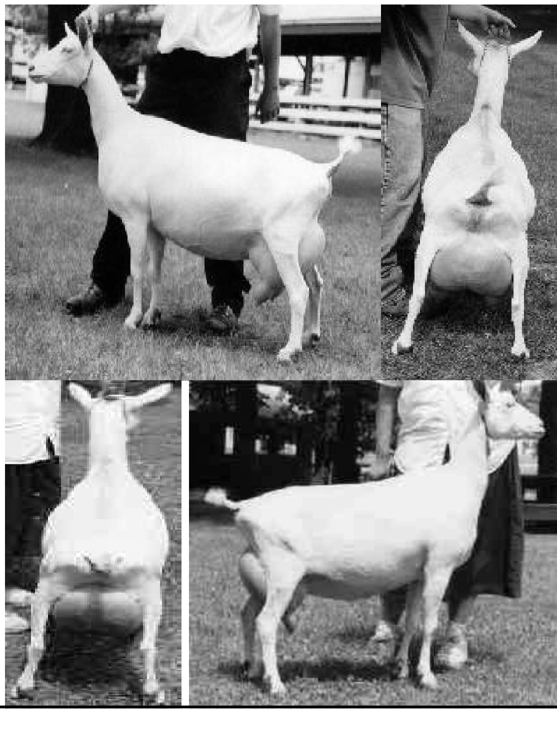
خصوصيات

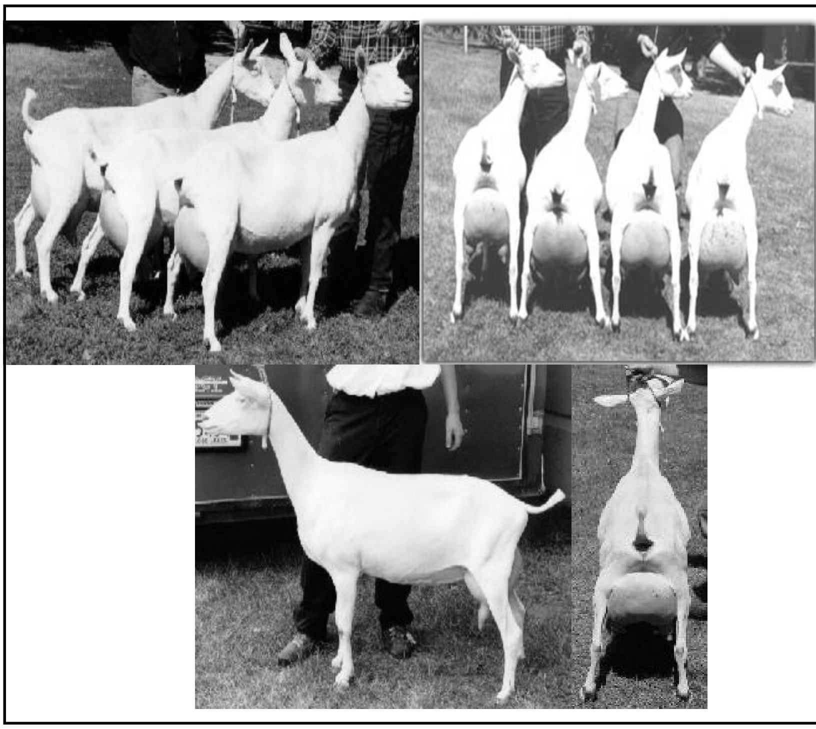
بز سانن دارای اندازه های متوسط و درشت است.
دارای استخوان بندی محکم و قدرت حيات و تطابق بالايي است
وزن بز ماده بالغ در حدود 50 کيلوگرم است
پوشش سفيد غالب است اما رنگ کرم کمرنگ نيز مشاهده می شود
داشتن نقاط سياه بر روی پوست تا حدودی پذيرفته شده است اما خصوصيت منفی است
بز های ماده اين نژاد بی شاخ است و دارای گوشهای کوچکی هستند
اما نرها ممکن است شاخدار باشند.
ميانگين توليد شير اين نژاد 2 کيلوگرم در روز است
مقادير بيشتر از 5 کيلوگرم شير در روز فراوان مشاهده شده است

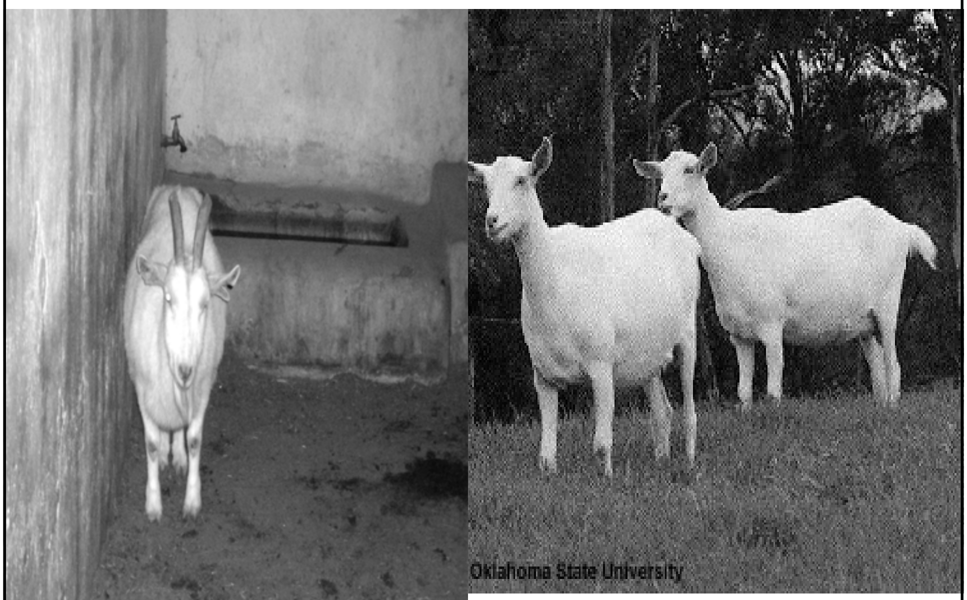
• پوشش سفید غالب است اما رنگ کرم کمرنگ نیز مشاهده می شود

داشتن نقاط سیاه بر روی پوست تا حدودی پذیرفته شده است اما خصوصیت منفی است







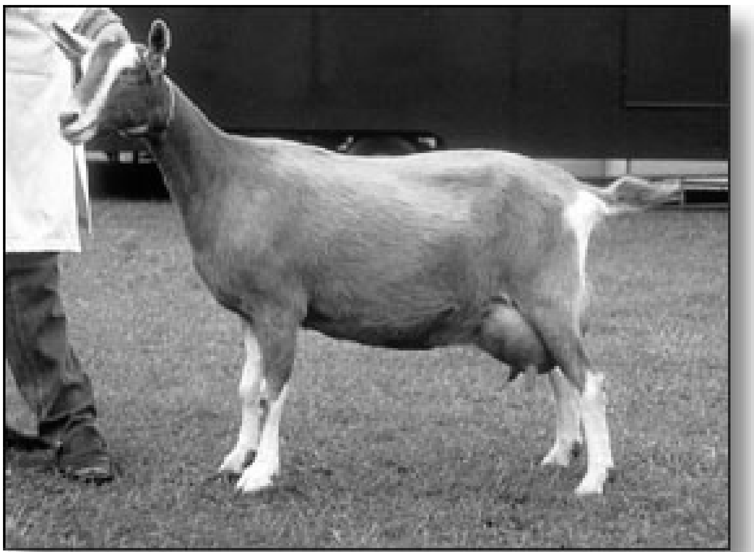

Oklahoma State University

TOGGENBURGS

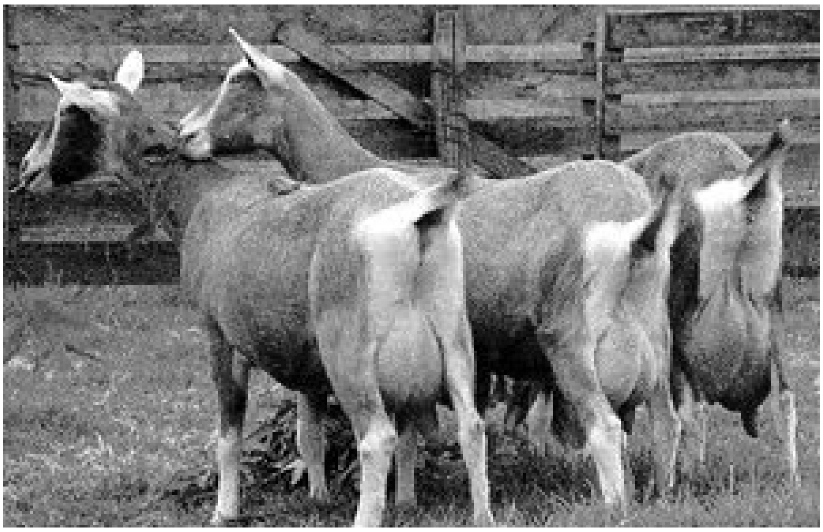


- **Light brown with white ears and two white stripes down the face**
- **Grow a shaggy coat**

TOGGENBURGS



British Toggenburg



Toggenburg



NUBIAN GOATS





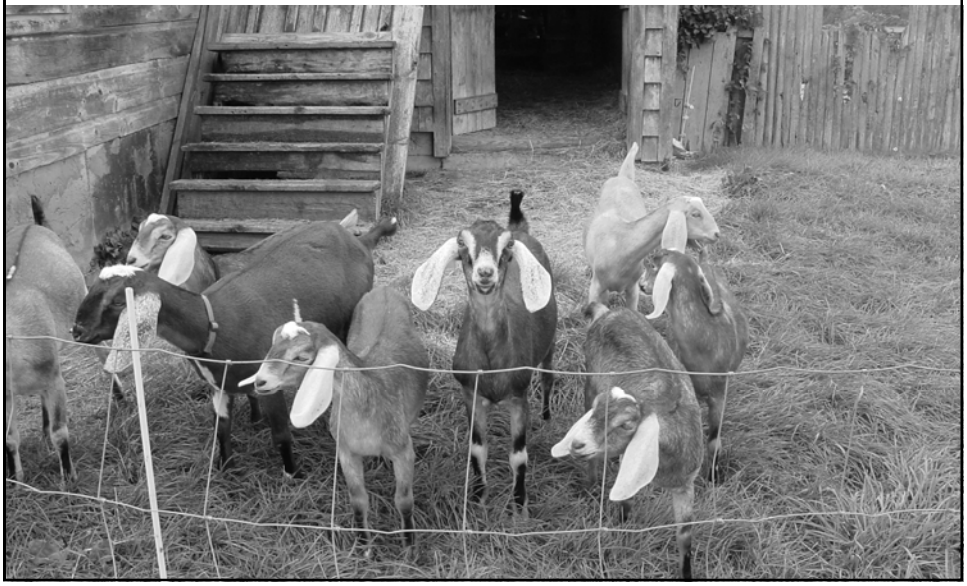
- **Originated in Egypt**
- **Long, floppy ears**
- **Roman nose**
- **Dairy Goat**
- **Large Goat**

Nubian

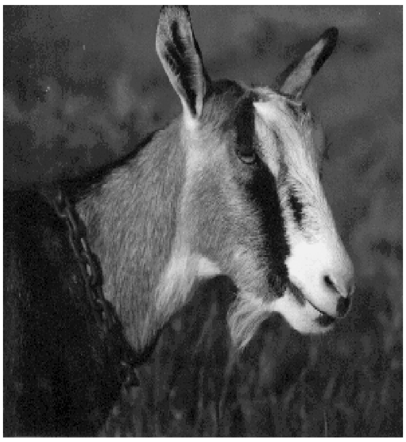
- Characteristics:
  - Popular breed of dairy breed
  - High butterfat
  - “Roman Nose”
  - Any color, black,tan,red with white
  - “Jersey” of goat breeds



Nubian



ALPINE GOATS



- Almost any colors except white
- Medium large ears
- Dairy Breed



ALPINE



British Alpine



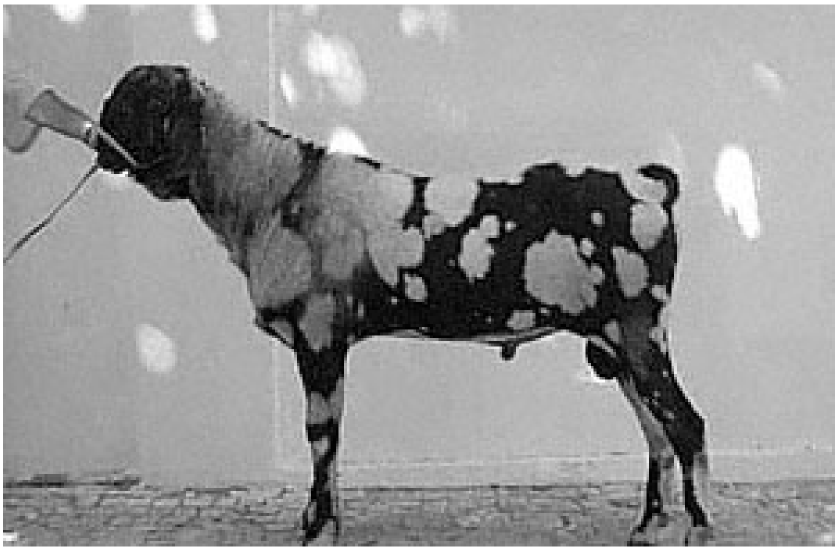
Jamnapari



Damascus



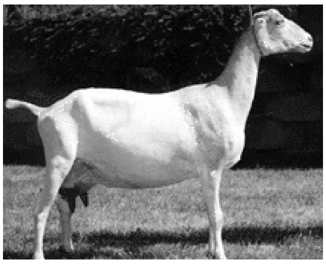
Anglo-nubian

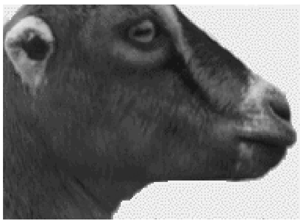


Anglo-Nubian



LA MANCHA





- Developed In USA
- Sometimes called the earless goat
- Short hair
- Any Color

OBERHASLI



- Swiss Breed
- Medium Size
- Bay color With two black stripes down face
- Dairy Breed

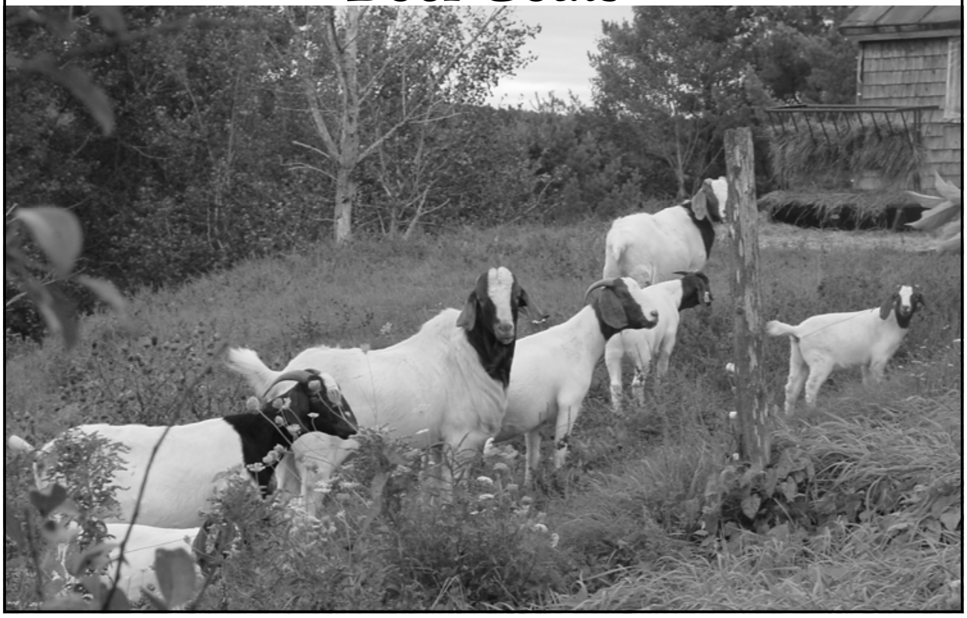
Golden Guernsey



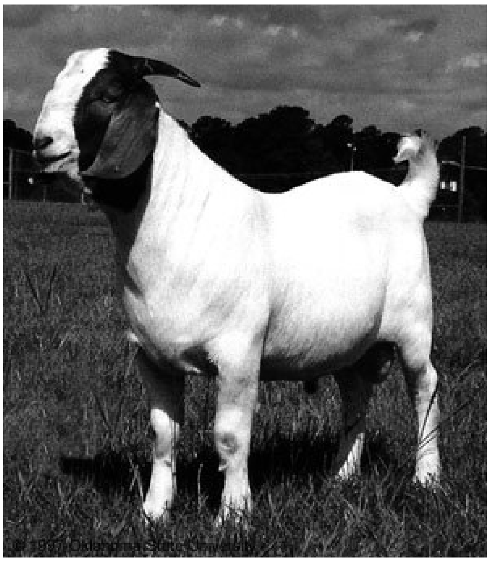
Somali



Boer Goats



Boer



South African Boar Goat



- Origin: South Africa
- Characteristics:
  - Brown head and neck; white body
  - Meat-type Goat
  - Droopy ears
  - Fast growing
  - Good meat
  - Superior body length and muscling

Bengal



Fiber Goat Breeds

There are 2 major Fiber breeds

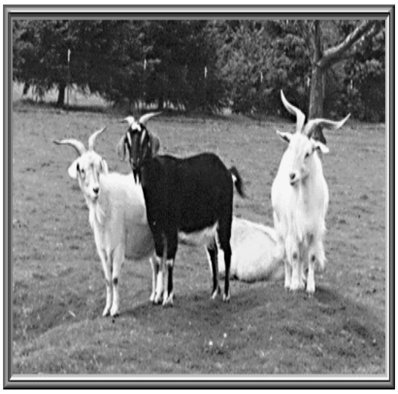
Cashmere

Angora

Mohair Goats

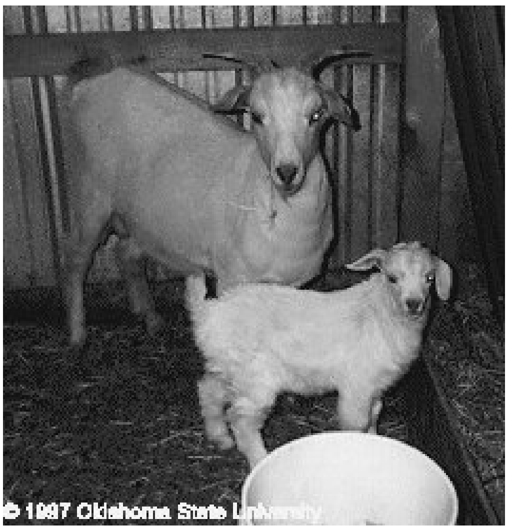
- The mohair goat is a variety that originated in Turkey, centering around the region of Angora.
- The average goat in the U.S. shears approximately 5.3 pounds of mohair per shearing and are usually sheared twice a year.

CASHMERE GOATS

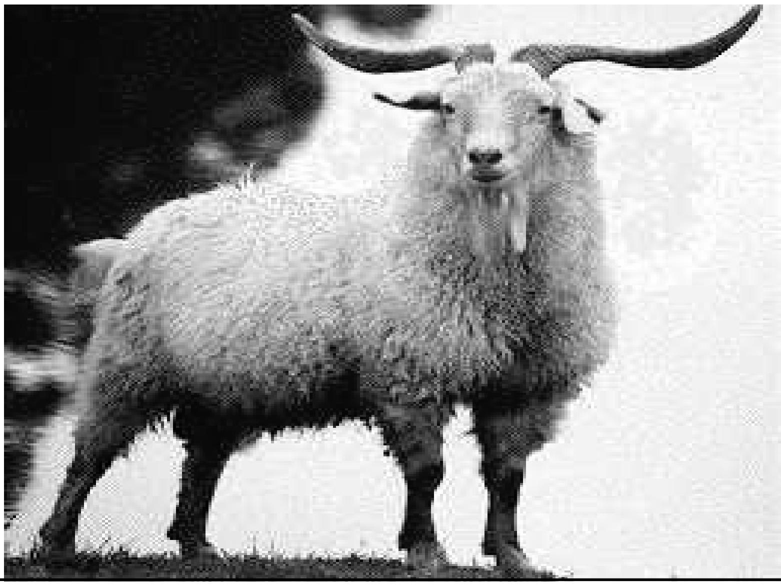


- Shed coat in summer
- Sheared once a year- yield 2 1/2 pounds
- Coat is called Fiber of Kings
- Type of goat, not a breed

Cashmere Goats



Cashmere



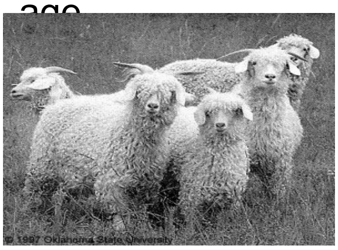
Angora

- Originated in Turkey
- well adapted to areas not fit for others
- almost totally white at maturity
- produce 3-4 kg mohair
- horned
- long droopy ears
- buck weigh 57 – 80 kg
- does weigh 36 – 41 kg.



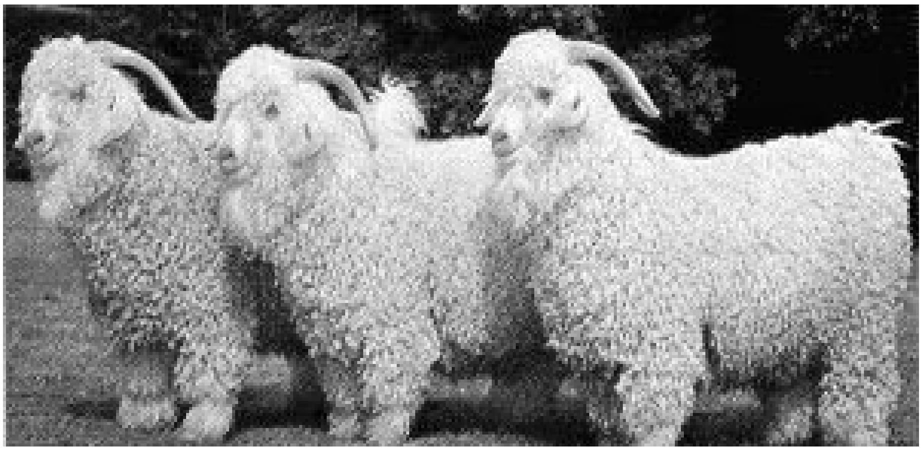
Angora

- Origin: Turkey
- Characteristics:
  - Produce mohair, high price fiber
  - 90% of Angoras in nation are in Texas
  - Kids have the finest hair, gets coarser with age





Angorra

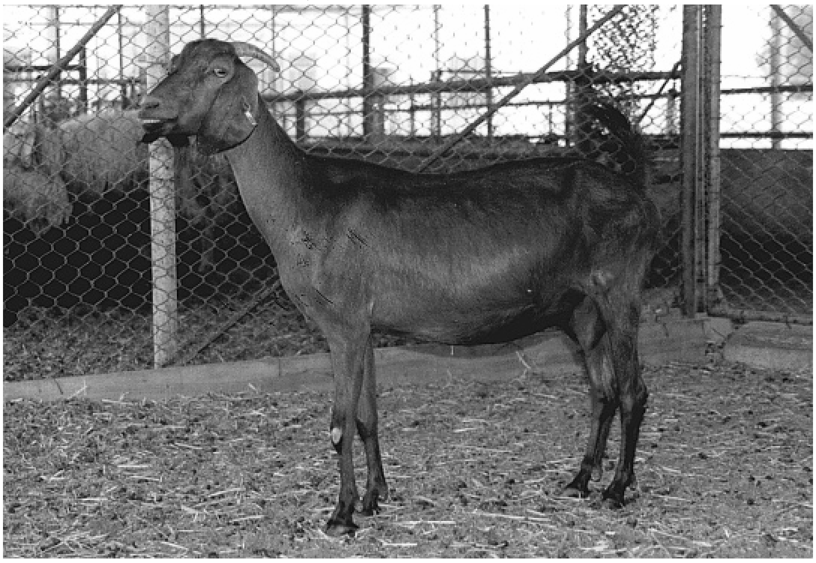


Angorra



- بزهای ایران
  - شیری
    - نجدی
    - تالی (ساحلی)
    - نائینی
    - نائینی
  - گوشتی
    - بز سیاه موئي هرمزگان
    - بز موئي کردستان
    - بز سیستانی
    - بز سراوانی
    - بز خلخالی
    - بز ترکی
  - الیافی
    - مرغره
    - رائینی

بز ماده نجدي



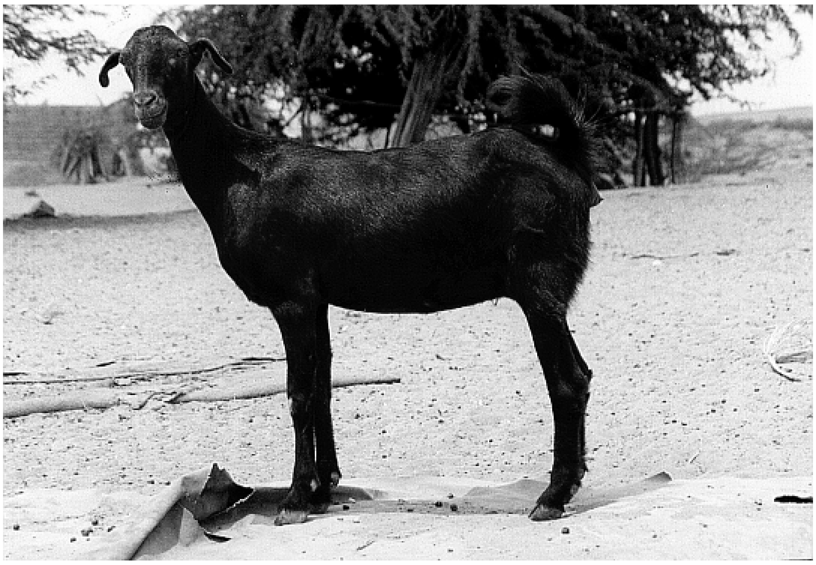
بز نر نجدي



بز تالی (ساحلی)



بز تالی (ساحلی)



بز نایینی



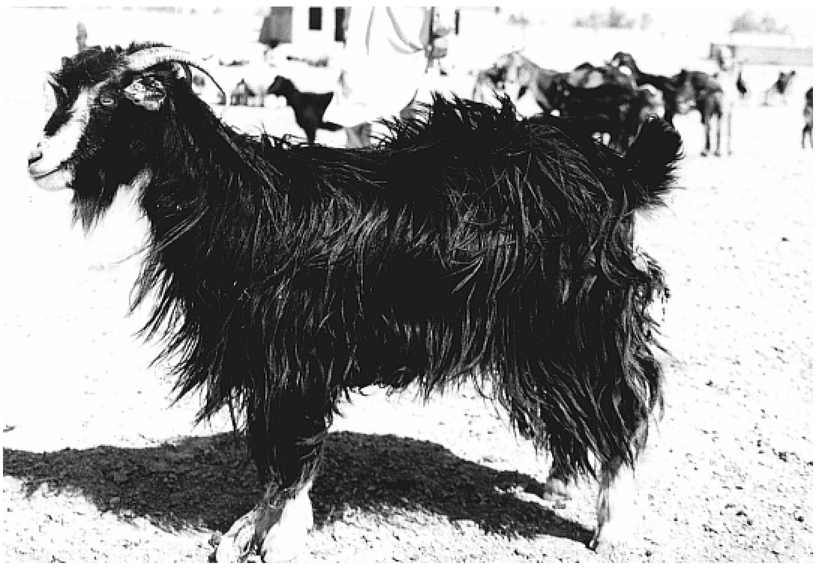
بز یزدی



بز مهابادی



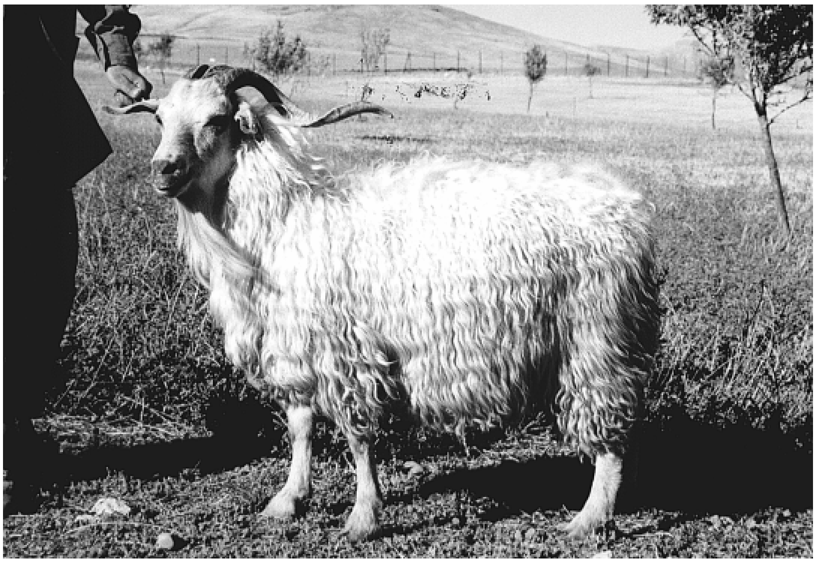
بز نر سیاه بومی سیستان



بز ماده خلخالی



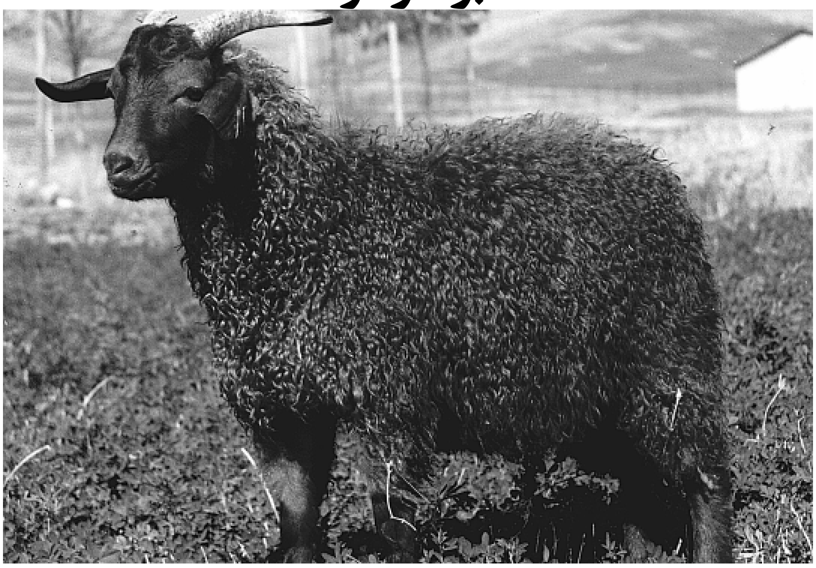
بز مرغز



بز مرغز



بز مرغز



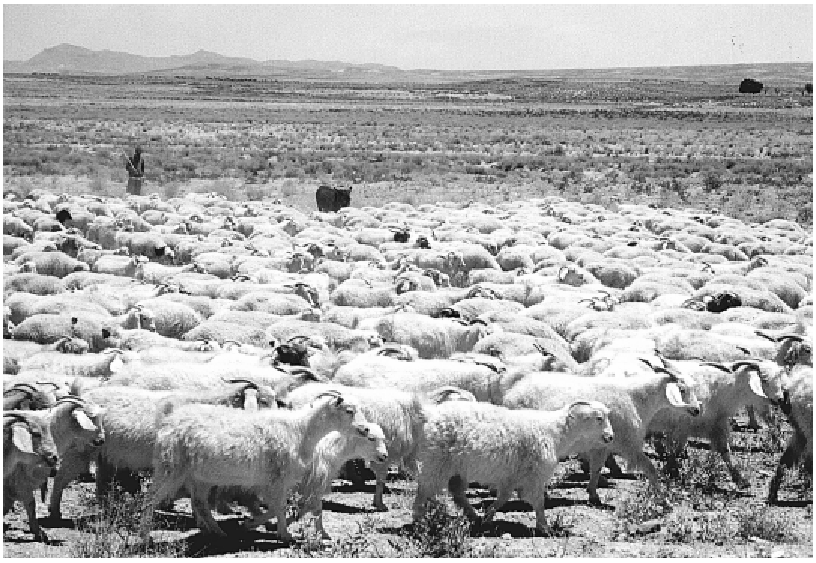
بز مرغز



بز رایینی



بز رایینی



سیستمهای پرورش بز

۱- چرای گسترده (Extensive grazing)

۲- گله های فامیلی خانگی (Sedentary family herds)

۳- پرورش متراکم تجارتی
(Intensive commercial production)

٤- پرورش نیمه گسترده (Semi-extensive system)

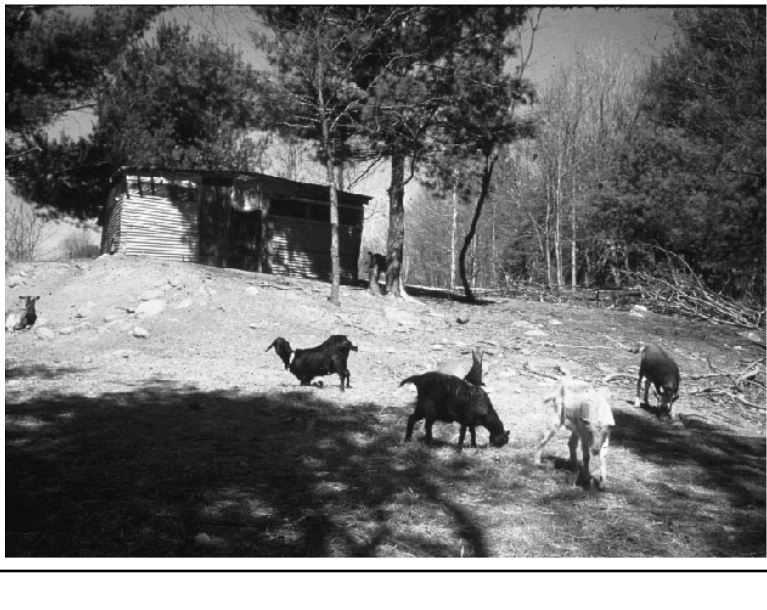


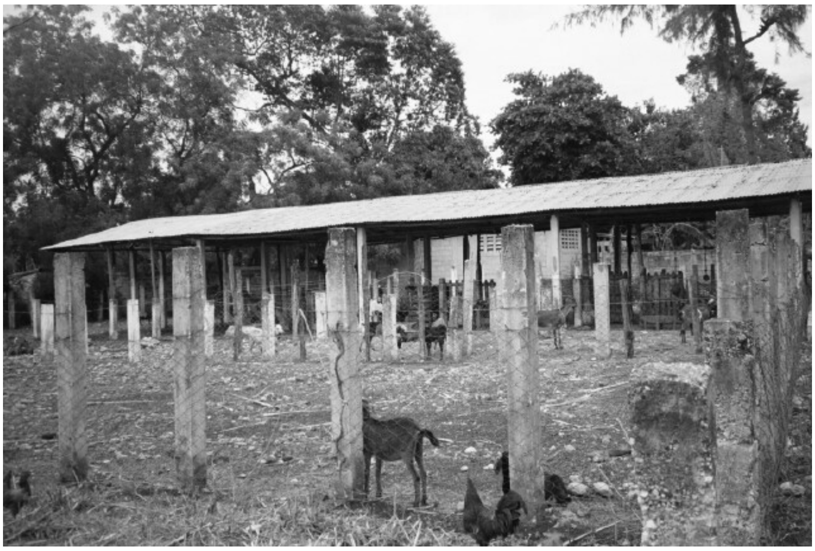
Extensive grazing





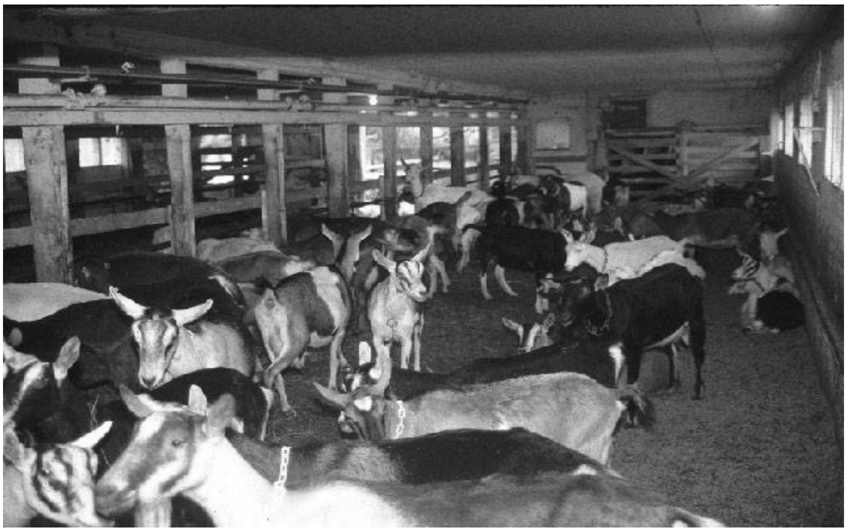
Sedentary family herds



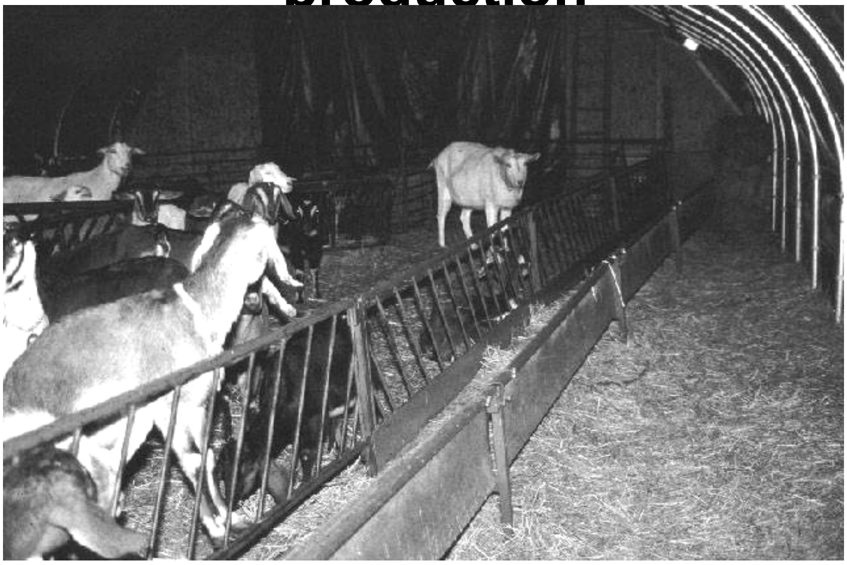




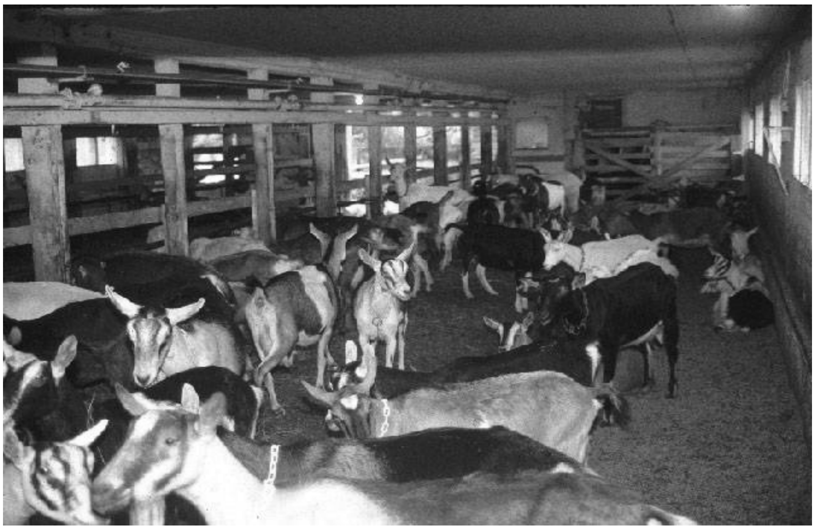
Intensive commercial production



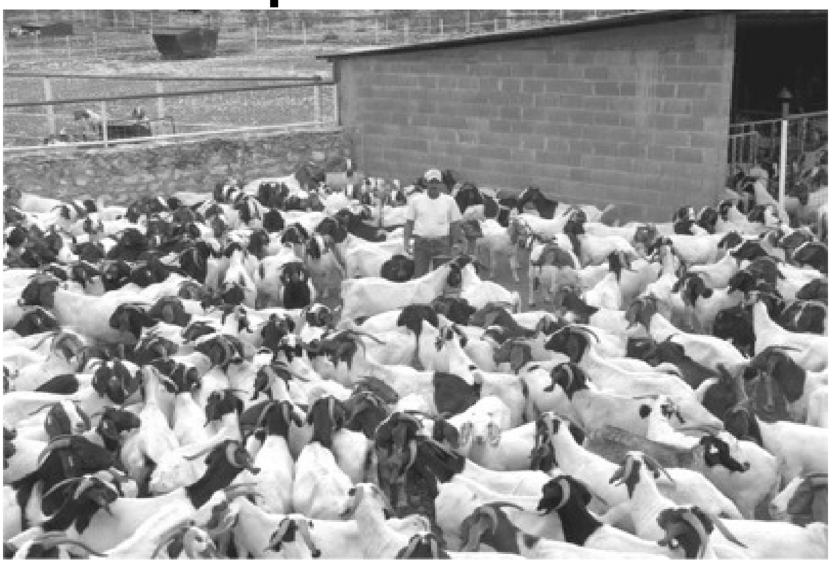
Intensive commercial production



Intensive commercial production



Intensive commercial production



Intensive commercial production

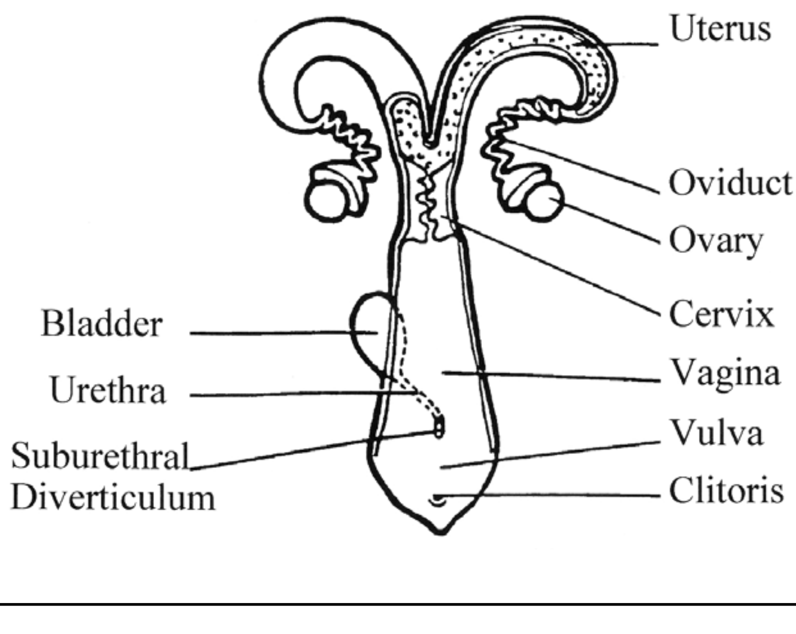


Semi-extensive system

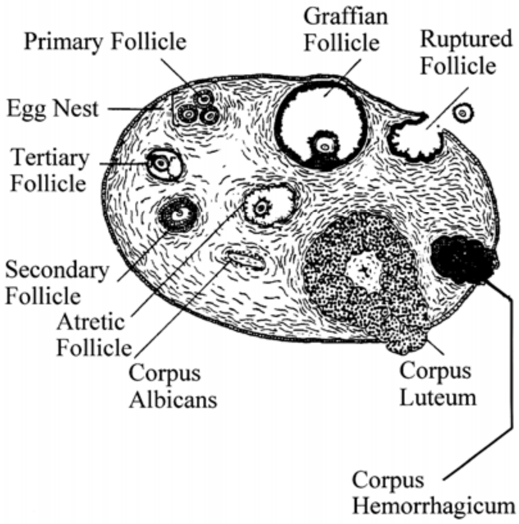


Reproduction in goat

Parts of the Reproductive Tract: Doe

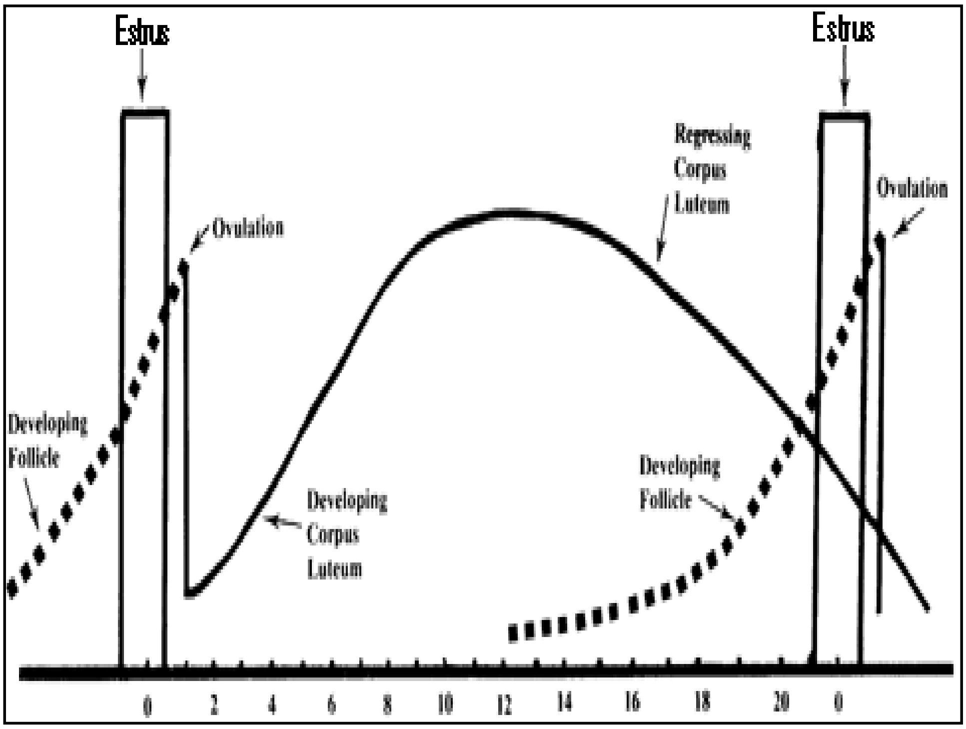


Ovarian Structures



Differences

Ewe		Doe
54	Chromosomes	60
17 days	Estrous Cycle	21 days
24-36	Estrous (hours)	24-48
Spontaneous	Ovulation	Spontaneous
24-27 h	Time from onset	24-36 h
No, with a few exceptions	Out-of-Season Breeders	Yes, with a few exceptions



The Basics

- **MOST breeds are naturally "seasonally polyestrous" and come into heat multiple times in the Fall so kids are born in Spring (best chance for survival)**
- **Pregnancy lasts 5 months**
- **Twins and triplets are common (even more so with flushing, genetic selection and certain breeds)**
- **Puberty reached at 7 months average (from 4 to 10)**

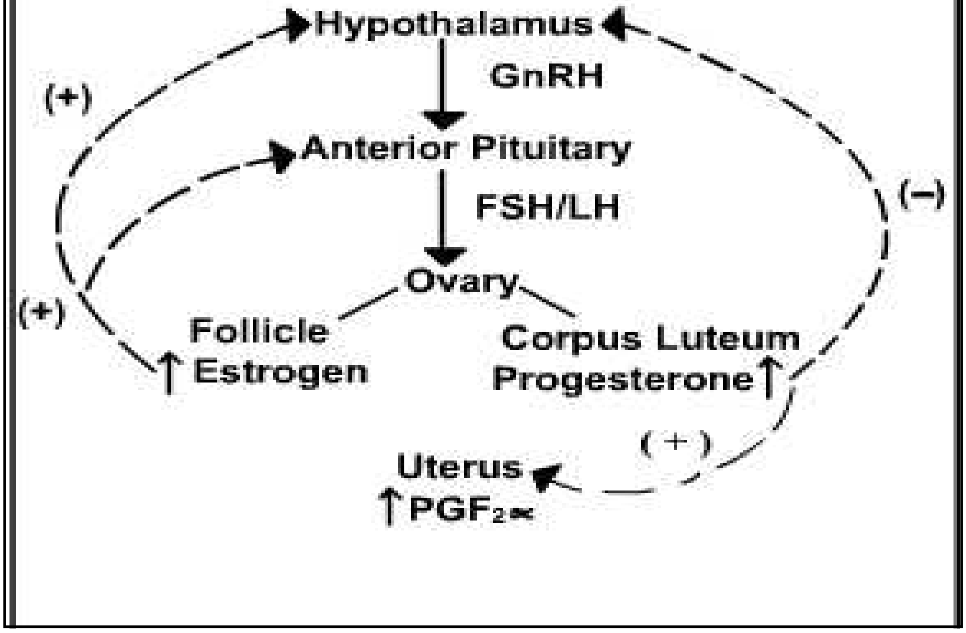
Facts about Female Reproduction

- Seasonal breeders (somewhat)
  - More active in fall and winter
  - August – January (Sept – Dec)
- Estrous Cycle (heat cycle)
  - 21 days (some herd variation)
- Estrus (heat period)
  - 30 – 40 hours
  - Ovulate 30 – 32 hours after beginning

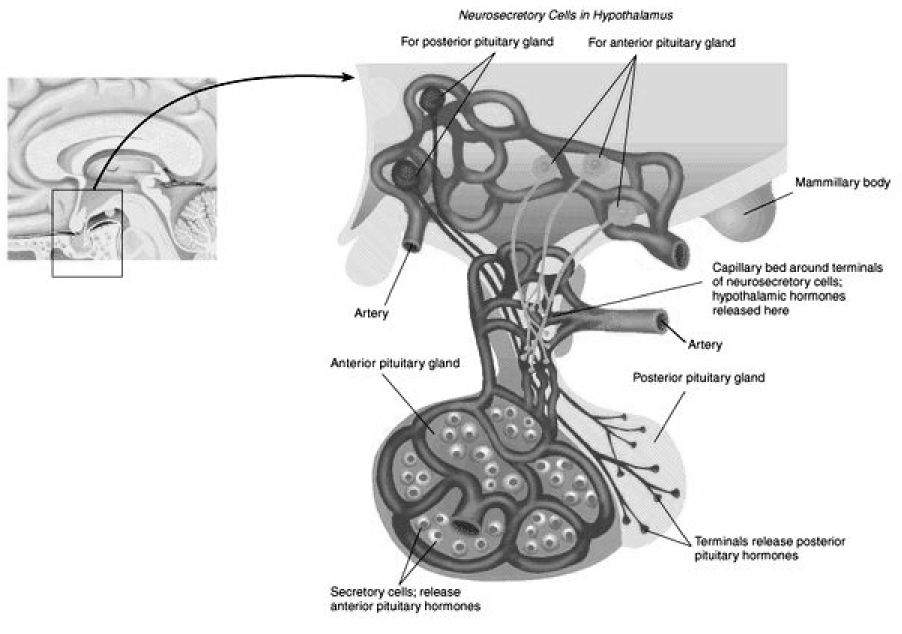
The Estrous Cycle

- Usually 21 days
- Standing heat for 24 (to 72+) hours
- Estrogen dominant for 2-4 days
- Progesterone dominant during luteal phase (12-14 days)

HYPOTHALAMIC-PITUITARY GONADAL AXIS



► The Pituitary Gland



Breeding Options

- Doelings: 60-70% of mature weight, or by 10-12 months old maximum
- Does: Two-three months after kidding (for three kid crops in two years)
- Every Fall, as does cycle naturally
- When she stands for buck
- AI: 12-18 hours after start of estrus

- Ovulation Rate (number of eggs released during each cycle)
  - 1 – 4 eggs
    - 2 – 3 more common
- Expected Kidding Rate
  - 125 – 200%
    - Depends on breed, management, age

- Gestation Length
  - 149 days
    - Variation in breed and operation
    - Twins will generally be a few days shorter
    - Kids and yearlings will generally carry fetuses less time

- Female goat must be 60 – 70% of their expected mature body weight.
- Must be 5 – 7 months old
  - Varies based on location and time of year
- Does can be bred to kid at 12 months of age if managed correctly
- Discuss puberty

Breeding Rates

- **Number of Bucks to place with your does depends on:**
  - **Age of buck**
    - **1 mature buck/25 – 30 does**
    - **1 young buck/15 – 20 does**
    - **Try not to mix young and old bucks during breeding**
  - **Single vs. Multi Sire**
    - **Single sire groups are less efficient than multi sire groups**

Signs of Estrus in goats

- **Bleating frequently**
- **Pacing**
- **Decrease milk production**
- **Frequent urination**
- **Drop in milk**
- **Swollen vulva**
- **Tail wagging**
- **Decreased appetite**
- **Clear vaginal discharge**
- **Homosexual behavior (occasionally**



Reproductive Hormones

- Leutenizing Hormome (LH)
- Gonadotropin releasing hormone (GnRH)
- Follicle Stimulating Hormone (FSH)
- Prostaglandins
- Estrogens
- Progesterones
- Oxytocin
- Relaxin
- Testosterones
- Prolactin

GnRH

- **Gonadatropin Releasing Hormone**
- **Produced by the hypothalamus**
- **Pulse of GnRH causes release of LH and FSH from the pituitary gland**
- **Is sometimes used to treat cystic ovaries**

LH

- **Luteinizing Hormone**
- **Produced and released by the anterior pituitary gland in response to pulse of GnRH**
- **Works with FSH to stimulate follicle to produce estrogen (days 18-21 of cycle)**
- **Stimulates ovulation 24 hours after LH peak**
- **"Luteinizes" the ruptured follicle which creates and maintains the C.L., which produces progesterone (days 4-16)**
- **Stimulates testes to produce testosterone**

FSH

- Follicle Stimulating Hormone
- Produced and released by the pituitary gland in response to GnRH
- Function: stimulate the development of a *follicle* (fluid-filled structure that contains an egg; days 17-21 of cycle)
- With LH: stimulates estrogen secretion from the follicle (days 18-21)
- Stimulate production of sperm cells in testes

Estrogen

- "The heat hormone"
- Produced by the mature follicle on the ovary
- Produces estrus behavior, growth of reproductive tract, uterine contractions and mammary duct growth
- High blood levels briefly at the time of estrus

Progesterone

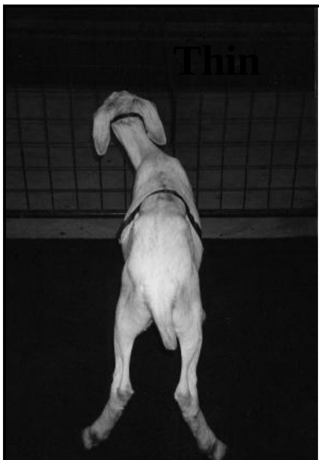
- **"The hormone of pregnancy"--prepares uterus for implantation and prevents uterine contractions**
- **Produced by the C.L. until the end of the cycle or end of pregnancy**
- **Helps prepare uterus for implantation, maintains pregnancy, causes some mammary duct growth**

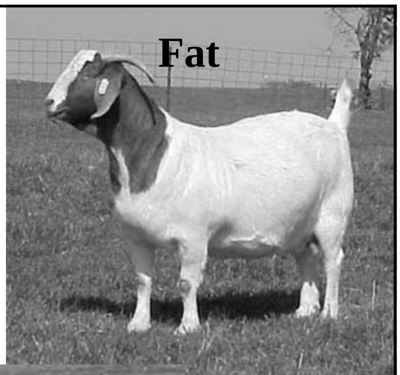
Prostaglandins

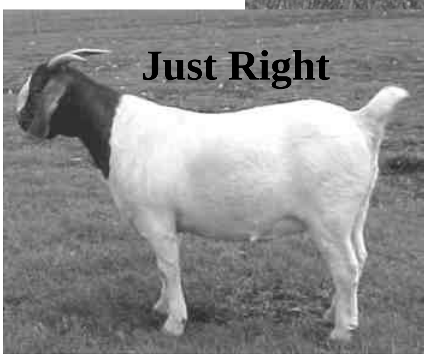
- **Produced by the uterus toward the end of the cycle or end of gestation**
- **Cause regression (destruction) of the C.L.**
- **Also cause contraction of smooth muscles (uterus)**

Body Condition

- Overly thin females will often not breed
  - Biologically she is concerned with self survival rather than reproducing
- Overly Fat females will often not breed
  - Maintenance requirements increase
  - Fat is negative toward reproductive hormones







Flushing to Improve Conception

- Flushing
  - Providing additional energy (grain) just prior to and during breeding to improve conception and twinning
  - 14-21 day prior to joining until the end for first estrous cycle
  - Marginally thin females
    - Must continue good nutrition during gestation
  - Will not work on fat does
  - Main benefit is increased multiples
  - How does it work

Breeding Soundness Exam and Serviceability

- At least 60 days prior to joining, conduct a breeding soundness exam (semen evaluation)
  - Make sure they have live sperm cells
  - Make sure they have concentrated sperm
  - Look for clot/clumps is semen (indicators of infection)
  - Palpate the testis
    - Observe defined epididymis
    - Firm testis
    - Uniform size
    - Absent of knots
  - Make sure they have the desire to breed
    - 20% of all males are homosexual

Reproduction and Kidding

- **Most common reproduction problem during kidding is Ketosis/Pregnancy disease/Pregnancy Toxemia**
  - **Result of a negative energy balance**
  - **Can occur in thin or fat females**
  - **Discuss**

Accelerated Kidding
3 Kid Crops Every 2 Years

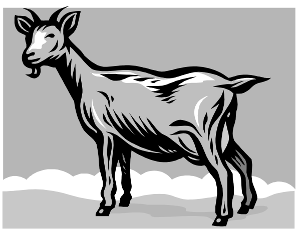
- Advantages
  - Increase kids weaned
  - Increase income (gross income)
- Disadvantages
  - Increased management cost
  - Increased feed costs
  - Increased demand on goats
    - Higher culling rate
  - Harder to maintain breeding program

Synchronization of Estrus

- Shortens breeding season
- Aids in AI
- Unknown conditions at kidding
- Must have adequate number of males
- Alternative – Male effect

<u>Pregnancy Detection</u>

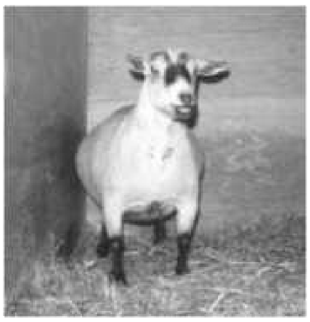
- Lack of heat
- Lack of interest in/by buck
- Hormonal assays (milk, serum)
- Ultrasound
- Doppler
- Hulet's Rod
- Ballottement
- X-rays



Normal Kidding

- Phase 1 = Prepatory period (ligaments relax, udder fills, fetus repositions, cervix dilates, cervical plug discharged); lasts 12-36 hours
- Phase 2 = Labor and delivery of kid(s); lasts 5-60 minutes
- Phase 3 = Passage of fetal membranes and placenta; lasts 0-12 hours

Phase 1



- Pacing
- Vocalizing
- Off by self
- Gets up and down often
- Looks at abdomen
- Doesn't eat
- Paws ground
- May leak milk
- Tailhead ligaments very loose
- Fetus is being presented to cervix, causing dilation
- Vulva swollen

Phase 1



Phase 2



- Doe usually lies down
- Fetal membranes appear
- Abdominal presses evident
- Nose and/or feet appear
- 5 to 60 minutes between kids

Phase 2



Phase 2



Presentation of fetal nose

Phase 2



Delivery of
fetal head

Phase 2



Phase 2



Note angle of lamb's body with respect to ewe's pelvis and mimic this when helping to deliver kid/lamb/calf/foal.

Completion of Phase 2: Delivery of Lamb



Completion of Phase 2: Delivery of Kid



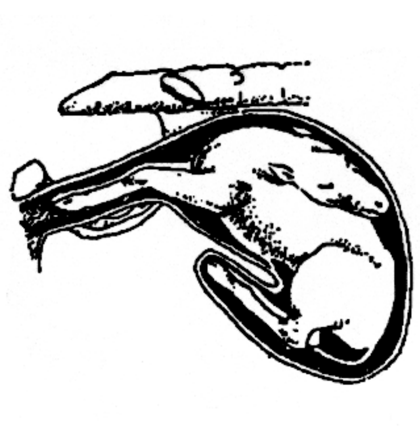
Beginning of Phase 3: Expulsion of Fetal Membranes and Placenta



Normal Presentation:

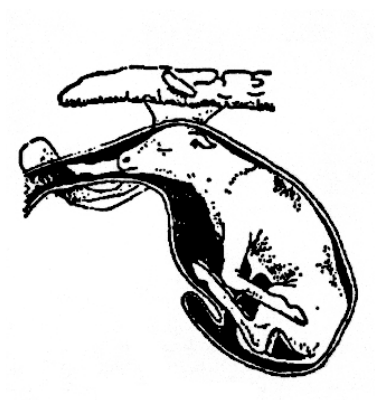
Front feet and nose of one kid

Head Back



- Very common
- Could confuse with breech presentation
- Won't feel tail or anus
- Check for ear, eye, teeth.
- Angle of mouth is a good handle
- Can be difficult to correct if kid dead a while
- Head snare can help

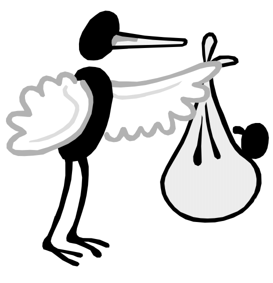
Leg Back



- Also very common
- ID front leg vs. back
- ID twins, single or triplets
- Follow leg to chest to other shoulder; follow leg to knee, bend knee tightly closed, cup hoof in hand, lift up and forward while pushing shoulder back; hoof must be delivered first
- Must protect uterus from hoof

Reproductive Problems

- Pregnancy toxemia
- Milk fever
- Abortions
- Retained placentas
- False pregnancy
- Prolapsed uterus



Retained Placenta

- **Retained beyond 12 hours**
- **Causes: infections, premature, abortion, selenium deficiency, calcium deficiency**
- **DON'T PULL!**
- **Treatment: call your vet**
  - **Oxytocin**
  - **Antibiotics (intrauterine vs. systemic)**
  - **NSAIDs help with fever, inflammation, toxins**

Prolapsed Uterus



- **Associated with lack of exercise, nutritional deficiencies and/or dystocia**
- **Treatment: call your vet**
  - **Clean, clean, clean (use HOT water)**
  - **Elevate hind quarters**
  - **Use gentle fists, not fingers**
  - **Antibiotics, oxytocin, tetanus booster**
  - **No need to stitch vulva if uterus replaced properly**
  - **"Bit" or bite block prevents doe from straining against prolapse reduction efforts**

Synchronizing Estrus

- **Why??**
- **Methods**

  1. Progesterone sponges, implants or feed additive for at least 14 days, +/- FSH; heat in 3-5 days.

  2. Prostaglandin (Lutalyse ® or Estrumate®) injections for herd; repeat in 10-11 days; most in heat 2 days later. Goat must have CL for treatment to be effective
- **You will need to have enough bucks or straws to service all does!**

NOTE: none of these products are approved for use in goats

Superovulation and Embryo Transfer

- **Cost prohibitive for most herds**
- **Being used by purebred Boer breeders and breeders of other rare or high-value breeds or individuals**
- **Steps: synchronize donor and recipient; superovulate donor; breed/inseminate donor; flush embryos; implant embryos in recipients**
- **Nutritional flushing two weeks pre/post-breeding associated with increased number of ovulations**

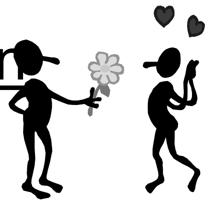
What about AI and ET

- Considerations
  - Genetic Improvement Desired
  - Current Market Warrant the added Expense
  - Access to Quality Genetics
  - Facilities
  - Management
  - Nutrition
  - Expertise
  - Equipment
  - Discuss

Artificial Insemination

- Reasons
- Growing in availability, practicality and popularity
- Steps: semen collection, processing, storage, insemination
- Inseminate 12-18 hours after estrus starts
- Methods: cervical, trans-cervical and laparoscopic

Breeding Out-of-Season



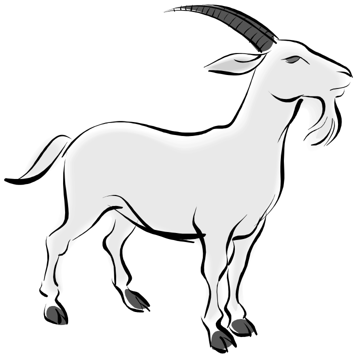
- Reasons
- Remember: most breeds respond to decreasing day length and start cycling in August or later.
- Methods: (combination is best)
  - Melatonin orally, injection or implant
  - Artificial Light: 16 hours of light
  - Male effect (new buck => greater effect)

The Buck's Reproductive Tract

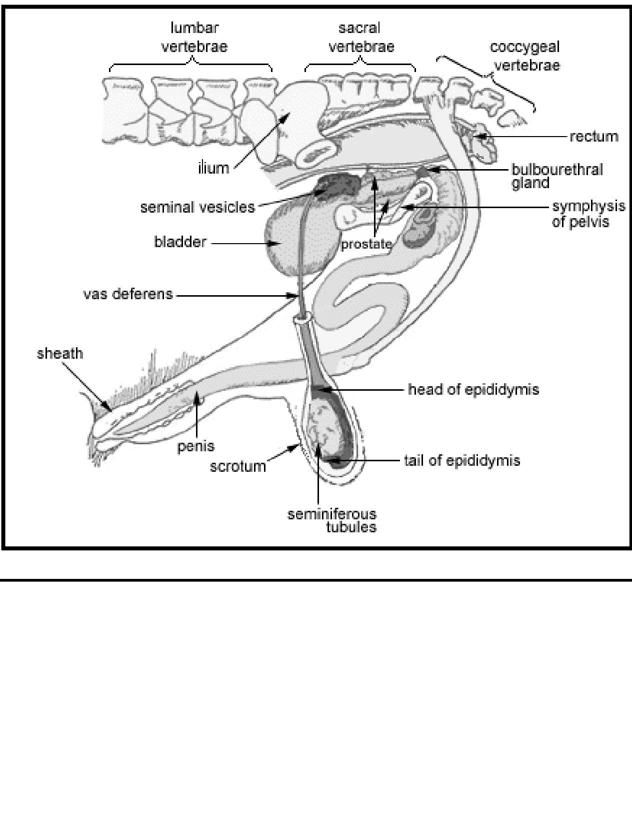
- Testes (produce sperm and testosterone)
- Scrotum (thermoregulation of testes)
- Epididymis (sperm maturation and storage)
- Vas Defrens (transport tubules)
- Ampulla Accessory sex glands add fluids
- Urethra (with sigmoid flexure)
- Penis (with filiform appendage)

Influences on Buck Fertility

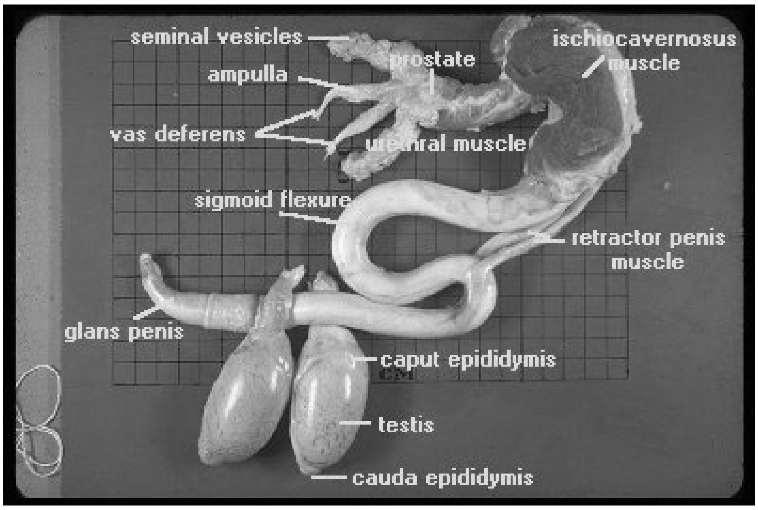
- Temperature
- Season
- Health
- Nutrition
- Genetics



Male Reproductive Tract



Male Reproductive Tract



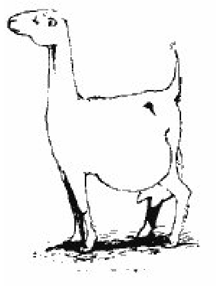


Milk production





WHY CONDISER DAIRY GOATS?



- Dairy goats are about 1/10 the size of a dairy cow.
- They have a longer productive life than the average cow.
- Less acreage is needed to support dairy goats.
- The average dairy goat is a cheaper investment than a cow.
- Less feed is needed for a goat to produce a gallon of milk.

MILK COMPARISON

Goat milk provides 13% more calcium, 25% more Vit B-6, 47% more Vit A, 134% more potassium and 350% more niacin than cow milk. Goat milk is higher in chloride, copper and manganese and none of the controversial bovine growth hormone.

MILK COMPARISONS: Goat vs. Cow vs. Human	Goat	Cow	Human
Protein %	3.0	3.0	1.1
Fat %	3.8	3.6	4.0
Calories/100 ml	70	69	68
Vitamin A (i.u./gram fat)	39	21	32
Vitamin B (µg/100 ml)	68	45	17
Riboflavin (µg/100 ml)	210	159	26
Vitamin C (mg ascorbic acid/100 ml)	2	2	3
Vitamin D (i.u./gram fat)	0.7	0.7	0.3
Calcium %	0.19	0.18	0.04
Iron %	0.07	0.06	0.2
Phosphorus %	0.27	0.23	0.06
Cholesterol (mg/100 ml)	12	15	20

GOAT MILK DETAILS……….

Normal goat milk fat has a higher concentration of so called medium chain fatty acids (MCT), caproic, caprylic, capric, lauric, myristic (33%) verses cow milk fat (17%), and lower in stearic and oleic (27%) lower than cow milk fat (45%). Much documentation exists showing the uniquely beneficial effects of those MCT, medium chain fatty acids in various medical problems, disorders and diseases, such as those suffering from mal-absorption syndromes chluria, steatorrhe, hyperlipoproteinemia, intestinal resection, coronary bypass, premature infants, childhood epilepsy, cystic fibrosis, gallstones, and contributes to general thriftiness of children.

Goat milk, like cows milk and human milk, contain lactose, but many people (but not all) with lactose intolerance and cow milk allergies can drink goats milk. Why? It is because of goat milks superior digestibility. Goat milk is more completely and easily absorbed than cows milk leaving less residue behind in the colon where it can ferment and cause problems. The digestibility of goat milk can be attributed to it's casin curd, which is both softer and smaller, thus easy to digest.

GOAT MILK!!!!! ?







شیرواری و عوامل تاثیر گذار بر آن

- شیر بز به کیفیت شیر گاو است و در اغلب موارد هضم آن آسان تر گزارش شده است
- یک کشاورز تنها با دو تا سه بز می تواند در سال شیر مورد نیاز خانواده خود را تامین کند

شیرواری و عوامل تاثیر گذار بر آن

- نژاد
- اندازه بدن
  - در نژادهای بزرگ: بدن بزرگتر ⇦ مصرف بیشتر ⇦ شیر بیشتر
- اندازه پستان
- سن بز
  - بیشترین تولید شیر بز در سن 4 تا 8 سال
- خوراک
  - مهمترین نقش را در رسیدن به پتانسیل تولید دارد

شیرواری و عوامل تاثیر گذار بر آن

- مرحله شیردهی
  - بیشترین شیر در فاصله 2 تا 10 هفته پس از زایش
  - طول دوره شیرواری بسیار به تغذیه و زمان جفت گیری وابسته است
    - با تغذیه مناسب بز تا ده ماهگی شیر می دهد
      - ولی اگر در خلال آن جفت گیری شود به تدریج خشک می شود
  - راه حل:اتخاذ برنامه مناسب جفت گیری راه حل عدم کاهش تولید و بهره وری مناسب است

شیرواری و عوامل تاثیر گذار بر آن

برنامه مناسب جفت گیری:

- بهترین زمان در فاصله 12 هفته پس از زایش است (2.5 تا 3 ماهگی)
  - با این برنامه سه زایش در طی دوسال خواهیم داشت:

5 ماه آبستنی+ 3 ماه تا جفت گیری بعدی = 8 ماه

2 سال = 24 ماه 3=8 ÷ 24

شیرواری و عوامل تاثیر گذار بر آن- ادامه

- بهداشت
- استرس
- روش شیردوشی
  - مهم دوشش منظم و در یک ساعت خاص با رعایت بهداشت است
  - شیردوشی دو بار در روز با فاصله هر 12 ساعت

MILKING PARLORS

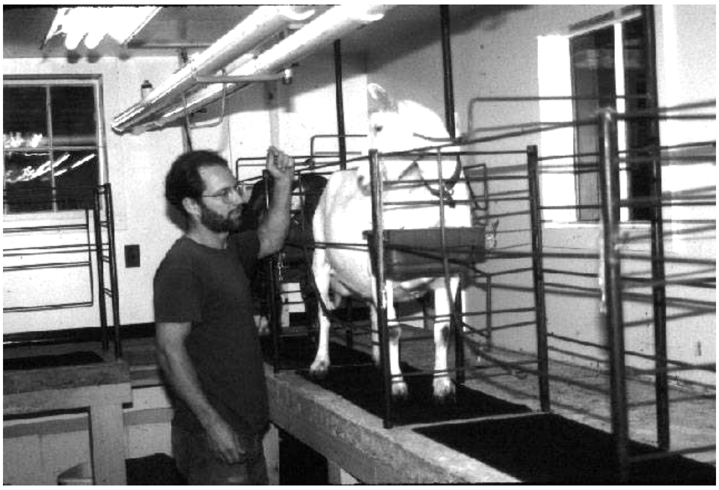
Parallel Parlor







Side opening parlor



Straight-through Parlor



Herringbone Parlor



Bails







Milking

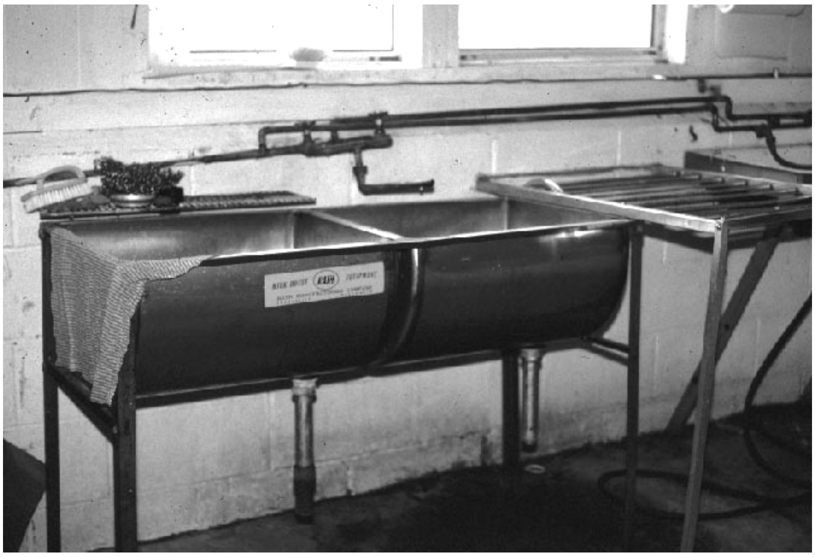




Bulk Tank & Stainless Steel Equipment

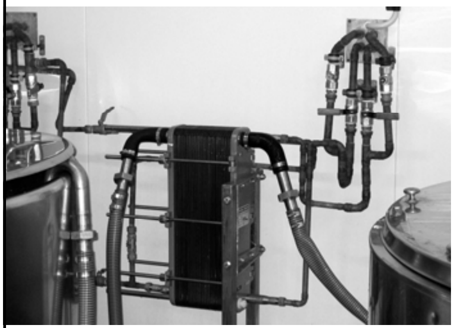


Sinks



Heat exchangers:

Remove heat from freshly drawn milk



↑ **Fully enclosed**

Open →



Hot Water Heater





Raw milk storage



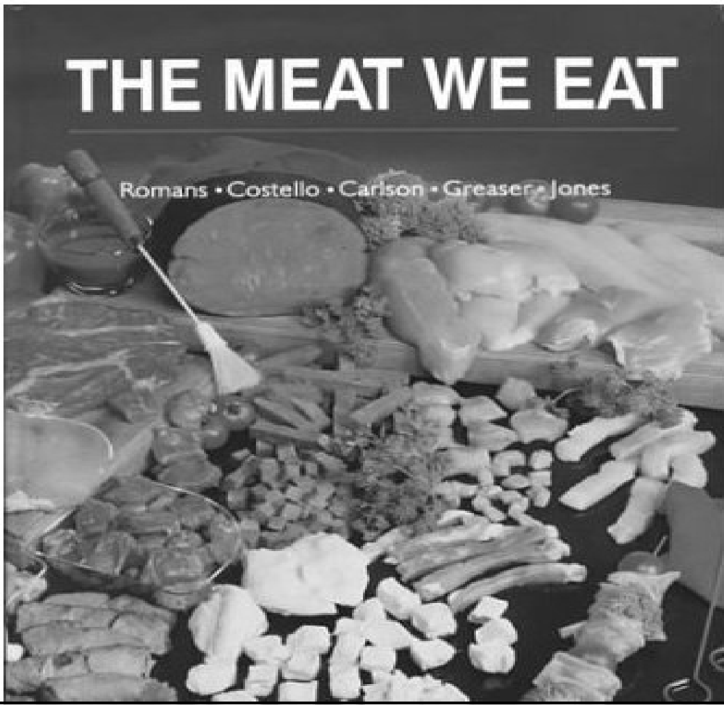
تولید گوشت

MEAT PRODUCTION








THE MEAT WE EAT
Romans • Costello • Carlson • Greaser • Jones

گوشت مجموعه ای از بافتهای

عضلانی، چربی، پیوندی و استخوانی

است که از لاشه حیوانات یا دامهای

کشتاری بدست می آید.

اندامهای گوشتی چون کبد، کلیه ها ،

قلب و زبان هم جز گوشت در نظر

گرفته می شوند

گوشت قرمز (Red meat)، گوشتی است که دارای درصد میوگلوبین بیشتری است. (حدود 0/3%)

لاشه (Carcass):

در خاتمه اعمال کشتاری یعنی پس از خونگیری، جدا کردن سروپاچه ها، پوست کندن، بیرون آوردن اندامهای درون حفرات شکم و سینه (کبد، معده، روده ها، طحال، مثانه، کلیه ها، اندامهای جنسی، مری، نای، ریه ها و قلب) و چربی های اضافی، به باقیمانده بدن دام لاشه می گویند.

لاشه مجموعه ای از عضلات، چربی، استخوانها، عروق خونی، اعصاب، زردپی ها و برخی بافتهای دیگر است.

مقدار خون باقیمانده در عضلات بدن بین 6 – 20% است

لاشه بازده گوشتی (لاشه) دام است.

بازده گوشتی بصورت وزن لاشه به

وزن دام زنده اتلاق می شود

نوع حیوان	بازده گوشتی (%)
گوسفند و بز	61-40
گاو	67-42
طیور	بیشتر از 70

$$\text{بازده لاشه} = \frac{\text{وزن لاشه}}{\text{وزن حیوان زنده}} \times 100$$

مهمترین اجزاء ساختمانی لاشه، عضلات مخلوط، چربی و استخوانها هستند. اما فقط عضلات بازده حقیقی لاشه یا گوشت را تشکیل می دهند. در گاو و گوسفند نسبت وزن عضلات به وزن دام زنده حدود 30-40% است

ترکیبات گوشت (%)

	گاو و گوسفند	طیور
آب	55-70	60-65
پروتئین	17-22	20-23
چربی	10-25	14-19

رنگ گوشت مربوط به میوگلوبین است و شدت این رنگ به میزان این ماده در عضلات، ماهیت میوگلوبین و pH گوشت بستگی دارد

میوگلوبین از دو جزء پروتئینی به نام هماتین (Tlaematin) و گلوبین (Globin) تشکیل می شود. هماتین جزء رنگی میوگلبین است.

رنگ گوشت پس از مدتی مجاورت با هوا (تقریباً 30 دقیقه پس از کشتار) روشن تر می گردد، زیر میوگلوبین در مجاورت هوا اکسیده می شود و بصورت دکسی میوگلوبین که دارای رنگ قرمز روشن می باشد، در می آید.

pH گوشت = ٦/٦ - ٥/٣

تردی گوشت = از روی مقاومت گوشت تازه در مقابل دندانهای مصنوعی دستگاه اندازه گیری تردی (Tenderometer) یا مقاومت گوشت پخته در مقابل دندانها هنگام جویدن گوشت مشخص می شود.

وضعیت کلی در سالنهای کشتار دام

بازرسی قبل از کشتار	اصطبل یا محوطه انتظار	سالن ذبح دامهای مشکوک

سالن کشتار **1- ذبح -بیهوشی** **- خونگیری** **2- پوست کنی** **3- تخلیه امعاء و احشاء** **4- مشقه کردن (در مورد گاو)** **5- دوش دادن** **6-بازرسی پس از کشتار**
انتقال به سردخانه بالا صفر (2C – 0)

تغییرات پس از کشتار در گوشت

1- تولید اسید لاکتیک از گلیکوژن (pH = 5/4 – 5/8)

2- صلابت نعشی (Rigormortis)

6 ساعت پس از کشتار شروع می شود ابتدا سر و گردن، سپس دستها و کمر..

18 ساعت بعد از کشتار حداکثر

24 ساعت بعد از کشتار از بین می رود

Goat meat



Introduction

For centuries goat meat has been featured on tables from the Mediterranean to Asia and the Pacific Islands.

There are more than 60 breeds of Goat in the world, supplying milk, meat, fiber, and skins for consumers. In the United States the goat industry is still in it's infancy and largely unorganized.

Goat meat, known as Chevon is especially popular with the growing ethnic population in the United States.

Understanding The Trend toward Chevon

There are several kinds of goat that are suitable for meat production. Spanish and Boers are just two of those.

Planned selection and breeding programs have not been done in depth by animal scientists to improve growth rates and carcass yield. As a result, the carcass composition is not consistent at this time. Goats deposit 45% of their body fat internally. Lamb and beef deposit 25%. Chevon is a very lean meat, catering to the general public's demand for healthier red meat.

Some Additional Facts

Chevon has 10 - 19% *MORE* lean carcass than beef and lamb.

The fat content of Chevon is lower than beef and lamb by 47 - 54%.

These qualities of Chevon should be publicized to the general public can be made aware of the benefits of goat meat products.

Cholesterol content of Chevon is similar to that of beef, lamb, pork, or chicken but much lower than some dairy, poultry, and some sea food.

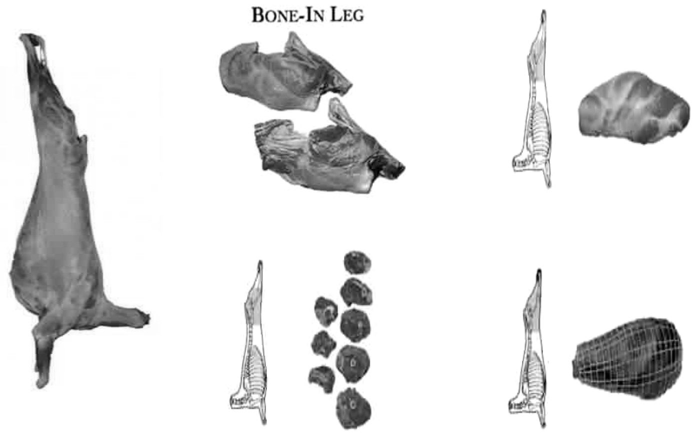
Lauric, myristic, and palmitic acids are saturated fatty acids and their concentration in Chevon is very similar to those acidic levels in ham.

Goat meat is relished and highly priced in many parts of the world, as cabrito by Spanish, chevon by French people, and also favored by US ethnic groups, such as Greek, Moslem, Jews, Arabs, Mexican, Puerto Ricans. Easter goat kids are in particular demand.

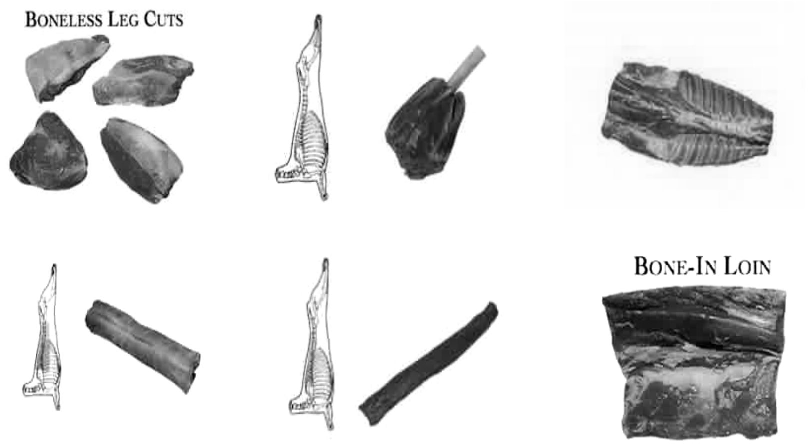
The Demand for Chevon:

The demand for Chevon comes from ethnic groups; the mostly white, middle-class population eats little goat meat. Ethnic and religious habits are an important factor of a consumer's choices. People from other countries work very hard to keep their traditions from being merged into the dominant society. Food and religion are the most obvious way to maintain their ethnic identity (Solomon, 1992). The consumption of Chevon is increasing due to the high numbers of immigrants from countries where goat meat is popular. Evidence of this is taken from the price of goat meat rising dramatically each year at Christmas, Easter and Ramadan. Another source of demand is coming from the "health food" sector and from the “yuppie” community who are beginning to eat Chevon as a gourmet item. So far, these are minor market forces, but this niche market is open to development. Chevon is a relatively "high ticket" item. This would lead to the belief that lower income ethnic groups would not buy it, but this is not true for three reasons: 1) ethnic households have a higher proportion of wage earners than households of other consuming groups, 2) immigrants are accustomed to paying more of their discretionary income for food, and 3) goat meat is regularly featured as holiday fare, particularly at religious celebrations, and cost is of less concern.

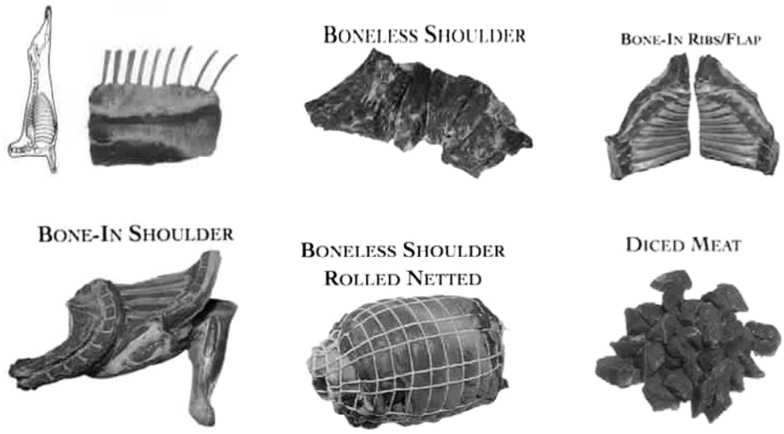
Cuts of Chevon:



Cuts of Chevon:



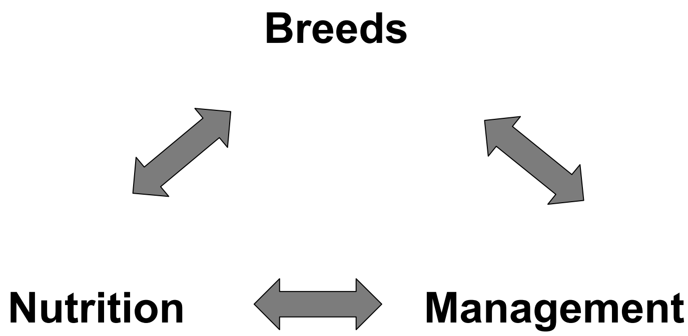
Cuts of Chevon:



Comparison of Lamb, Mutton, & Chevon Con't.

Results of the sensory panel studies conducted by the University of Florida (Gainesville) and Texas A&M University suggest that flavor scores were similar for all breeds and also for goats and sheep. Since the method of preparation used for sensory panel evaluation does not reflect the methods for butchering, chilling, aging and cooking used in other countries, further studies are indicated to determine if similar results can be achieved when domestic versus foreign panelists are used to measure how palatable meat might be if eaten by people from another country (Griffin,1992).

Healthy Profitable Goat Production



Nutrient Requirements for Goats

- Water
- Energy
- Protein
- Fats
- Minerals
- Vitamins

Water

- 60-76% of body weight
- Efficient users of water
- Limited intake will result in:
  - Reduced feed intake
  - Reduced performance
  - Gradual starvation

Energy Deficiency

- Retards kid growth
- Delays puberty
- Reduces fertility
- Depresses milk production
- Reduces resistance to infectious diseases and parasites

Energy Limitations

- Inadequate feed intake:
  - Feed restriction (drought, overstocking, etc.)
  - Low digestibility
  - High moisture (small grains, ryegrass, etc.)

Energy requirements affected by:

- Age
- Body size
- Growth
- Pregnancy
- Lactation
- Environmental stress
- Hair growth
- Muscular activity (more active than sheep)

Energy requirements increased:

- 25% for each level of activity
- 20% for the last 2 months of gestation

Protein is:

- Vital for animal
  - Maintenance
  - Growth
  - Reproduction
  - And milk production

Protein deficiencies in the diet:

- Deplete
  - Blood
  - Liver
  - Muscle
  - Predispose animals to serious and sometimes fatal ailments

Diet quality and quantity

- Minimum of 6% crude protein daily
  - Or feed intake reduced
  - Resulting in combined deficiency of protein and energy
  - Reducing rumen function
  - Lowering the efficiency of feed utilization

Long-term protein deficiencies:

- Retard fetal development
- Result in low birth weights
- Depress milk production
- Severely restrict immune response

Protein requirements based on:

- Energy:protein ratio expressed as (1 Mcal DE to 22 g DP to 32 g TP)
- Last ½ of gestation increases to 6.97 g TP/wt $kg^{.75}$
- Depends on amount of milk produced and percent of milk fat for lactation

Mineral requirements

- Macro minerals:
  - Calcium
  - Phosphorus
  - Sodium
  - Chlorine
  - Magnesium
  - Potassium
  - Sulphur
- Micro minerals:
  - Iron
  - Iodine
  - Copper
  - Molybdenum
  - Zinc
  - Manganese
  - Cobalt
  - Selenium
  - Fluorine

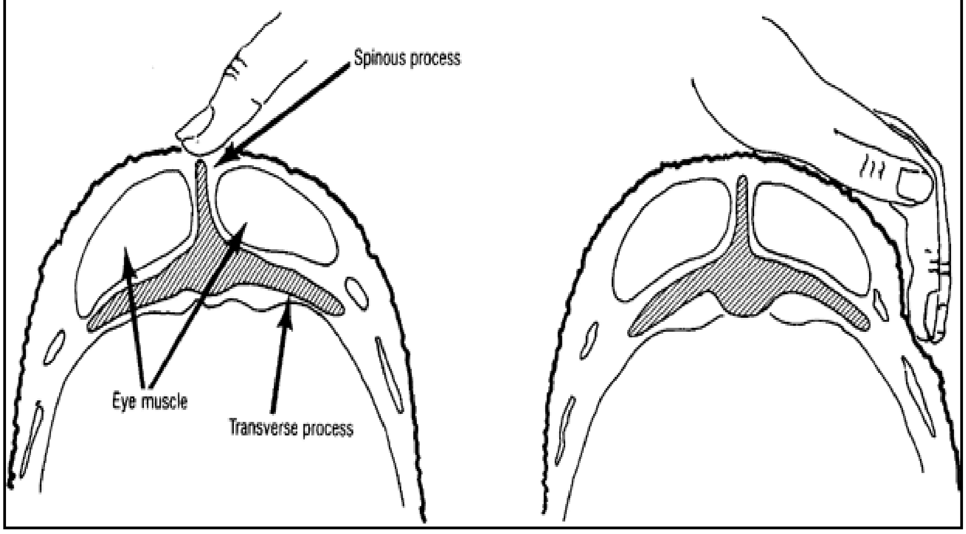
Vitamins

- Necessary for enzyme systems functions, immune response, metabolism, tissue function, etc.
- Usually available in sufficient quantity
- Poor grazing conditions, high production, or restricted diets may necessitate supplementation

Generally speaking:

- Goats select from a greater variety of plants (woody plants).
- Used as browsers to clean up brush.
- Overstocking must be prevented to avoid destruction of all ground cover.
- Intensively graze and remove to rest pastures and regenerate desirable plants.
- Studies indicate goats are more efficient digesters of high fiber forages than other grazing animals.
- Consequently, they may be the best use of a given resource (limited, brushy, or rough terrain).

Body Condition Scoring (BCS)



Body Condition Scoring (cont.)

Body Condition Scores

Score	***Area***	***Condition***
1 (Very Low)	**Spinous Process**	**Prominent and sharp**
	Transverse Process	**Sharp, can feel underneath them and feel each process**
	Eye Muscle	**Shallow, no fat covering**
2 (Low)	**Spinous Process**	**Prominent, but smooth**
	Transverse Process	**Smooth, rounded, can feel each with a little pressure**
	Eye Muscle	**Moderate, little fat covering**
3 (Good Condition)	**Spinous Process**	**Only small elevation, smooth, rounded**
	Transverse Process	**Smooth, firm pressure needed to feel over the ends**
	Eye Muscle	**Full, moderate fat covering**
4 (Fat)	**Spinous Process**	**Can be detected with pressure as a hard line down the back**
	Transverse Process	**Cannot be felt**
	Eye Muscle	**Full, thick fat covering**
5 (Very Fat)	**Spinous Process**	**Cannot be felt**
	Transverse Process	**Cannot be felt**
	Eye Muscle	**Very full, very thick fat covering; may be lumpy over tail and rump**

Nutrition

- **Similarities**
  - **Both are small ruminants**
    - **CP and TDN requirements**
  - **Stocking rate**
    - **1 cow / 2 acres**
    - **1 cow ≈ 5 sheep**
    - **1 sheep ≈ 1 Boer or Boer cross goat**

Nutrition

- **Similarities**
  - **Both are small ruminants**
  - **Stocking rate**
- **Differences**
  - **Grazing habits**
    - **Sheep tend to graze from the bottom upward**
    - **Goats tend to graze from the top downward**

Grazing Habits



Goat Grazing Habit



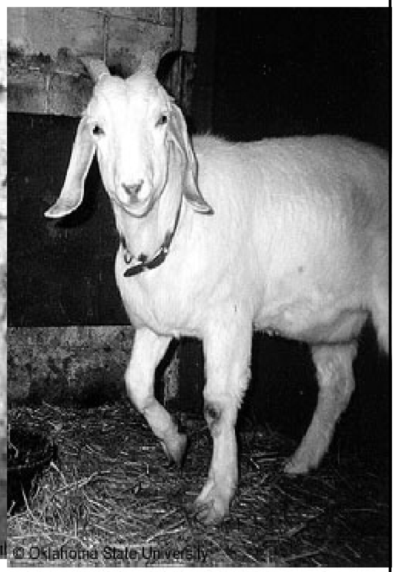
Before grazing



After grazing





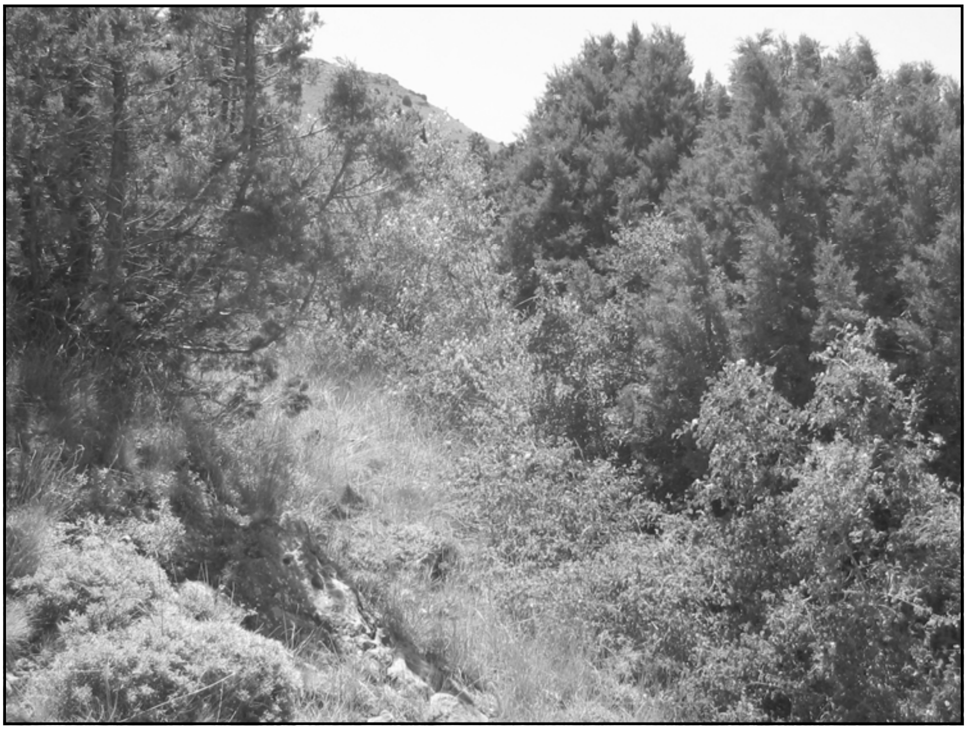


Provided by Crystal D'Eon

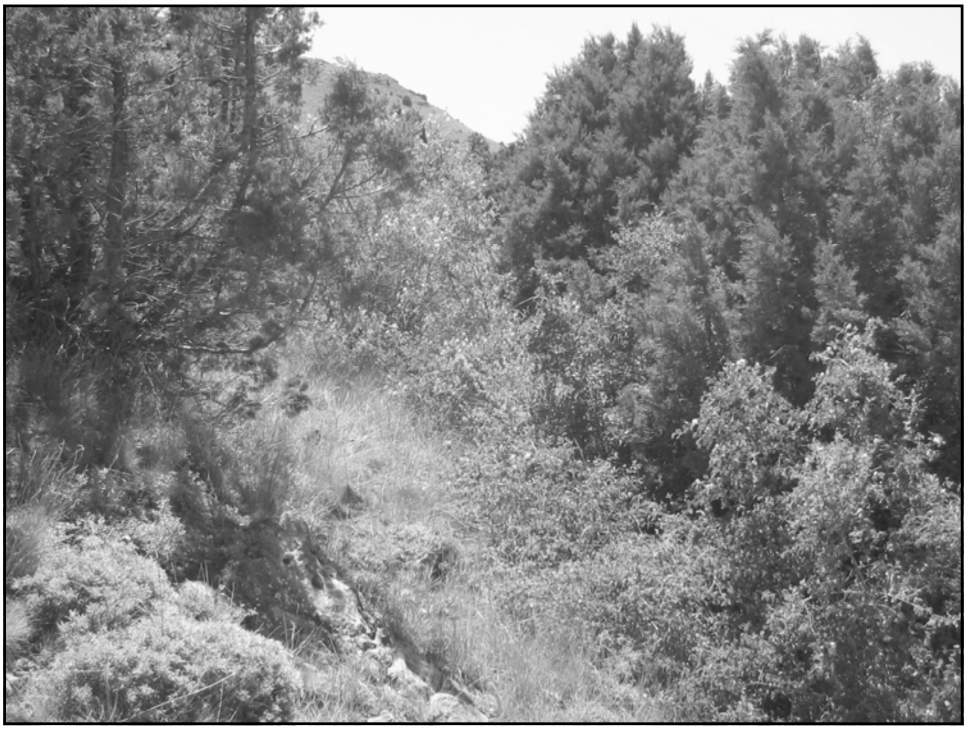




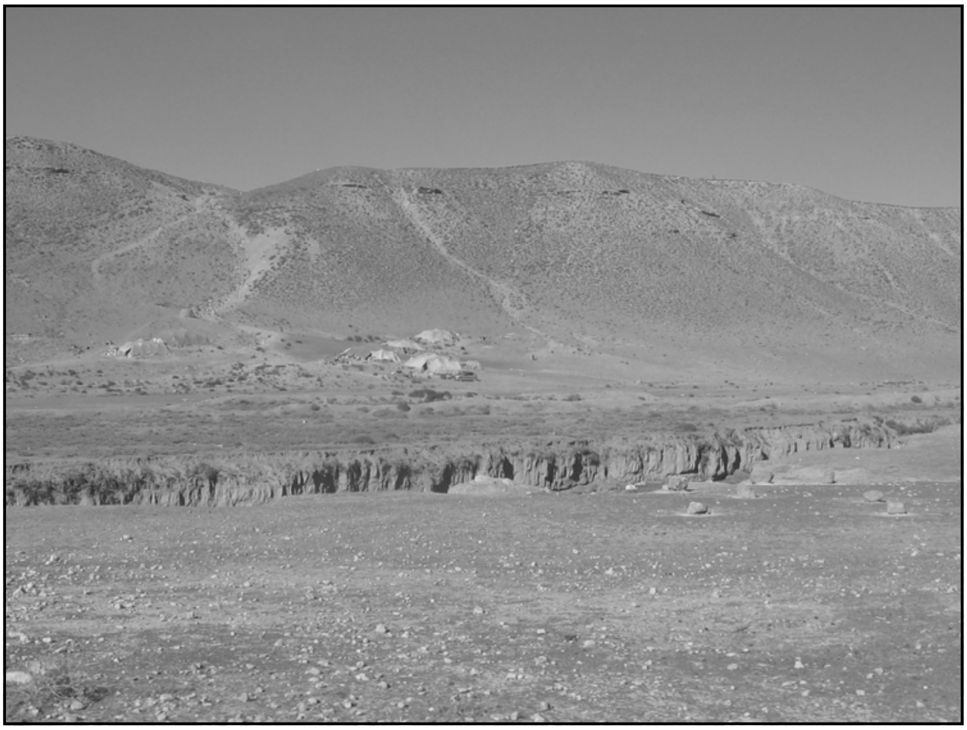


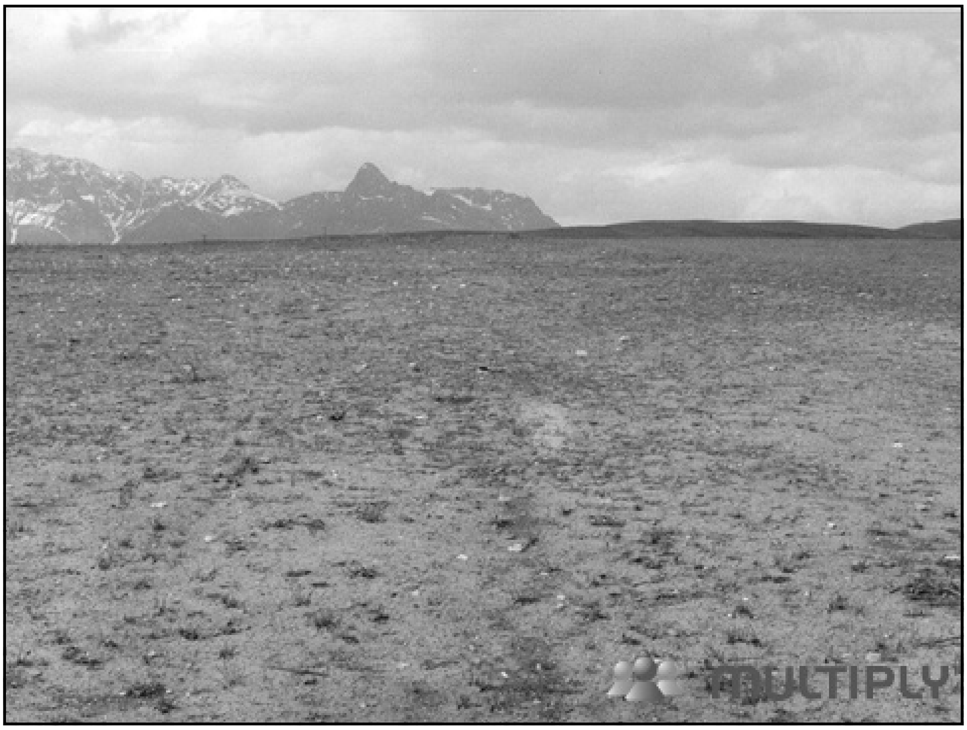
















Goat nutrition

Nutrition

- **Similarities**
  - **Both are small ruminants**
  - **Stocking rate**
- **Differences**
  - **Grazing habits**
  - **Grazing preferences**

Goat Nutrition Requirements

- Boer cross doe
  - 2-3 yr old
  - Lactating
  - Twins
  - 125lbs
- 65% TDN
- 10% CP
- DMI 4.6 lbs
- DMI=4% body weight

- Boer cross doe
  - 2-3 yr old
  - Dry
  - 125 lbs
- 59% TDN
- 9% CP
- DMI 2.32 lbs
- DMI=2% body weight

Grazing Preferences

- **Sheep**
  - **Fairly Selective**
    - **Forbs**
    - **Grass**
    - **Browse**
  - **HAY**
    - **Alfalfa**
    - **Coastal Bermuda**
    - **Orchardgrass**
    - **Peanut**
- **Goats**
  - **Very Selective**
    - **Forbs**
    - **Browse**
    - **Grass**
  - **HAY**
    - **Peanut**
    - **Orchardgrass**
    - **Alfalfa**
    - **Coastal Bermuda**

Nutrition

- **Similarities**
  - **Both are small ruminants**
  - **Stocking rate**
- **Differences**
  - **Grazing habits**
  - **Grazing preferences**
  - **Specific nutrient requirements**

Nutrient Requirements

- **Sheep**
  - **~2%BW Dry Matter**
  - **Very Sensitive to Cu**
  - **P requirements are similar to goats but do not appear to be as sensitive**
- **Goats**
  - **~3%BW Dry Matter**
  - **Need 2-3x Cu level**
  - **Very Sensitive to P (Do not exceed 0.40% on the feed tag – 0.35% is ideal)**

Nutrition

- Similarities
  - Both are small ruminants
  - Stocking rate
- Differences
  - Grazing habits
  - Grazing preferences
  - Specific nutrient requirements
  - Fat deposition

Nutrition

- Lambs
  - Self-feeder
  - Pellet or Textured Feed
  - 16-18% CP
  - 1.5-2.5% Fat
- Kids
  - Self-feeder
  - Pelleted Feed
  - 14-16% CP
  - 2.5-3.5% Fat

Nutrition for selected phases of production

- First 15 weeks of Gestation:
- BCS should be about 3 (good condition)
- 110 lbs. doe consuming 2.5 to 3 lbs. of good quality grass hay, or average quality legume hay.

Phase feeding (cont.)

- Last 6-8 weeks of Gestation:
- Feed 1-2 lbs. of grain concentrate
- 1.75 lbs. of high quality legume hay

Lactation:
2 lbs. of corn, or similar grain
2.5 lbs. of high quality legume hay

At weaning:
Feed according to body condition of the does

Phase feeding (cont.)

- Prior to breeding:
  - Flush does in fair to poor condition (increases number of eggs ovulated)
  - By increasing quality of pasture or hay, or feed ½ to ¾ lbs./hd/day of grain
  - Begin 2-3 weeks before introducing bucks
  - Not effective for yearling replacements

Phase feeding (cont.)

- Bucks:
  - Maintain at a BCS of 2.5 to 3
  - If necessary increase feed 4-6 weeks prior to breeding season (BCS 3 - 4)
  - May require 1-2 lbs./hd/day of grain through the breeding season

Phase feeding (cont.)

- Creep Feeding:
  - If appropriate provide feeders 7-10 days post-kidding (results variable for the first 3-4 weeks.)
  - Aids in teaching the kids to eat, promotes rumen development
  - Increase weight gains
  - Improve feed conversion
  - Promote early growth and development

Creep Feeding (cont.)

- Feed should consist of 25-30% high quality alfalfa hay
- Grain concentrate consisting of:
  - 80% whole shelled corn
  - 10% rolled oats
  - 10% soybean meal
  - Consumption light at first, but should reach ½ to 1 lbs./hd/day by weaning

Intake as a function of Body Weight

BW, lb.	1.5%	2%	2.5%	3%	3.5%	4%	6%
	Intake, % BW						
						Intake, lb/day	
30	0.5	0.6	0.8	0.9	1.1	1.2	1.8
40	0.6	0.8	1.0	1.2	1.4	1.6	2.4
50	0.8	1.0	1.3	1.5	1.8	2.0	3.0
60	0.9	1.2	1.5	1.8	2.1	2.4	3.6
70	1.1	1.4	1.8	2.1	2.5	2.8	4.2
80	1.2	1.6	2.0	2.4	2.8	3.2	4.8
90	1.4	1.8	2.3	2.7	3.2	3.6	5.4
100	1.5	2.0	2.5	3.0	3.5	4.0	6.0
110	1.7	2.2	2.8	3.3	3.9	4.4	6.6
120	1.8	2.4	3.0	3.6	4.2	4.8	7.2
130	2.0	2.6	3.3	3.9	4.6	5.2	7.8
140	2.1	2.8	3.5	4.2	4.9	5.6	8.4
150	2.3	3.0	3.8	4.5	5.3	6.0	9.0
200	3.0	4.0	5.0	6.0	7.0	8.0	12.0

Nutrient Requirements for Maintenance and production

BW, lbs.	CP, lbs./day	TDN, lbs./day
22	0.07	0.53
44	0.12	0.88
66	0.16	1.20
88	0.20	1.48
110	0.24	1.75
132	0.28	2.01
154	0.31	2.25
176	0.34	2.49
198	0.37	2.72
220	0.41	2.94

	CP lbs./day	TDN lbs./day
		Late
Gestation, add	0.18	0.87
Growth Rate (ADG)		
.22 lbs./day add	0.06	0.44
.33 lbs./day add	0.10	0.66
.50 lbs./day add	0.15	0.90
Lactation add	0.16	0.76

General Guidelines

Feedstuff	% CP	% TDN
		Energy
Corn	10	88
Milo	10	82
Oats	13	77
		Protein
Cottonseed Meal	45	75
Soybean Meal	49	84
Supplements		(if 10% CF)
20% CP	20	70
Complete Diet		(if 16% CF)
12% CP	12	61
14% CP	14	61
16% CP	16	61
18% CP	18	61
		Hay
Alfalfa	18	60
Sorghum	08	50's
Bermuda	07	45

Crude Fiber content is specified on tag

Crude Fiber	Approx. TDN %
4	79
6	76
8	73
10	70
12	67
14	64
16	61
18	58
20	55
22	52
24	49

Example Ration Calculation

- 154 lbs. Doe in late gestation requires:
  - .49 lbs. of crude protein/hd/day
  - 3.12 lbs. of TDN/hd./day (energy)

Intake = 3% BW, or 4.62 lbs./day

Alfalfa Hay contains 18% crude protein, and 60% TDN
Corn contains 10% crude protein, and 88% TDN

Example Ration Calculation (cont.)

- Thumb Rules:
  - Nutrients supplied by forage – nutrient requirement of animal = nutrient excess or deficiency.

4.62 lbs. x .18 = .83 lbs. CP

4.62 lbs. x .60 = 2.77 lbs. TDN

2 lbs. Alf. hay = .36 lbs. CP and 1.2 lbs. TDN

2.62 lbs. corn = .26 lbs. CP and 2.3 lbs. TDN

.62 lbs. CP and 3.5 lbs. TDN

Example Rations

- Gestating Does: Pasture plus mixed grass-legume hay and 1 lbs. of 16% CP grain supplement.
- Lactating Does: 3.5 lbs. of a grass-legume hay and 5.5 lbs. of 16% CP grain supplement.

Example Rations (cont.)

- Weaned to Yearling kids: Good hay or pasture plus .5 to 1.67 lbs. of 16% CP grain supplement.
- Bucks: (Idle) Good quality hays and/or pasture.

(in season) 1 to 2 lbs. of a 14% CP grain concentrate plus good quality hays and/or pasture.

Goat management

What is management?



- The act of managing something.
- The supervising or directing of an enterprise/business.
  - Effective utilization and coordination of <u>resources</u> such as capital, animals, materials, and labor to achieve defined <u>objectives</u> with maximum <u>efficiency</u>.

Define your objectives

Your management practices will be dictated largely by the goals and objectives of your goat enterprise.

Why are you raising goats? (1

Business (profit), experiment,

What product are you producing? (2

Goat meat, dairy products, fiber, pets, breeding stock, wethers,

What and who is your market? (3

Open market, local & international markets, consumers, restaurant owners, meat processors

Goat management covers many different aspects of raising and caring for goats.

- Feeding
- Health management
- Breeding
- Processing kids
- Facilities



What is the best type of goat?

- The one that fits your system, matches your resources, and makes you the most money.
- There is as much difference within breeds as between breeds.
- From a commercial standpoint, the best goat is one that performs the best, within the available resources
  - **This is especially true for does and the bucks used to produce replacement females.**



How many goats can I raise?

- It depends on your management system and resources.
  - Land
    - Quantity
    - Quality, type
  - Capital
    - Own
    - Borrowed
  - Labor
    - Quantity
    - Distribution
    - Management ability



How many goats can I raise?

- Goats can be raised in different production environments.
  - All confinement/dry lot
  - All pasture/range
  - Combination of both



How many goats can one acre support?

It depends on

- Time of the year
- Rainfall, distribution
- How much you supplement?
- Whether you graze year-round?
- How intensively you manage your pastures?
  - Fertility
  - Rest/rotation



As a general rule of thumb, 1-2 acres will support 1,000 lbs. of grazing livestock.

What do I feed my goats?

- Ideally, roughage (pasture, range, browse, and/or hay) should comprise the majority of the diet for your goats.
- Goats are ruminants.
- Goats are selective grazers. They prefer browsing to grazing when given the opportunity.
- Forage diets tend to cause fewer digestive problems.
- Browse diets cause fewer parasite problems.



When should I supplement my goats?

- Provide supplemental feed when the forage is deficient in nutrients <u>and/or</u> it is economically justified.
  - Free choice minerals
  - Last 1/3 of pregnancy
  - First 6-8 weeks of lactation
  - Creep feeding and/or supplemental feeding of kids to increase growth, condition, and worm tolerance.
  - Flush does in poor condition for breeding.
  - Poor quality pasture
  - During drought or wet conditions.



What type of fencing is the most appropriate for goats?

- Goat-proof and predator-proof.





- <u>Predator control options</u>
  - Fencing
  - Management
  - Livestock guardians









How else can I do to control predators?

- Common sense
  - Carcass removal
  - Good neighbor relations
- Management
  - When and where do you kid?
- Livestock guardians
  - Guardian dogs
- Lethal control
  - Shooting, trapping, denning, livestock protection



What type of housing do I need to raise goats?





- Depends when you kid.
  - Spring, fall - minimal
  - Winter - maximum
- Need facilities to work goats.
- Need a place to store feed and equipment.
- Need a place to keep bucks when they are not being used.
- Shelter areas in pasture.
- Housing is also for convenience and comfort of people.

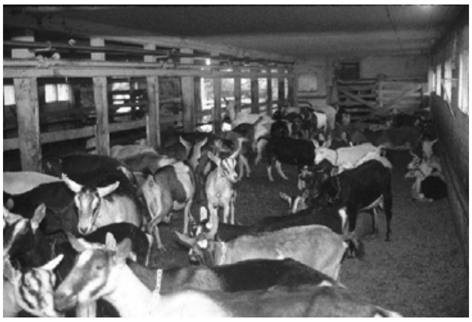




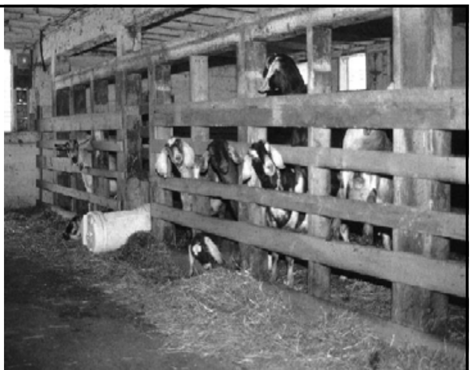
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Often times old dairy cattle stanchion barns are used for dairy goat housing. The back platforms can be used for a bed-pack.





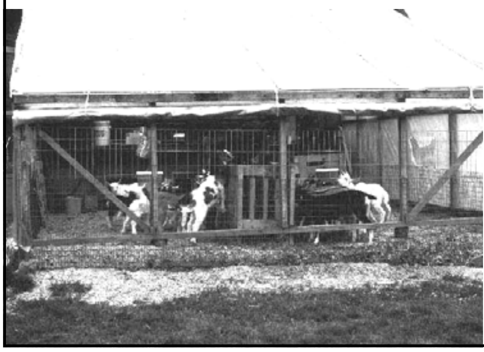
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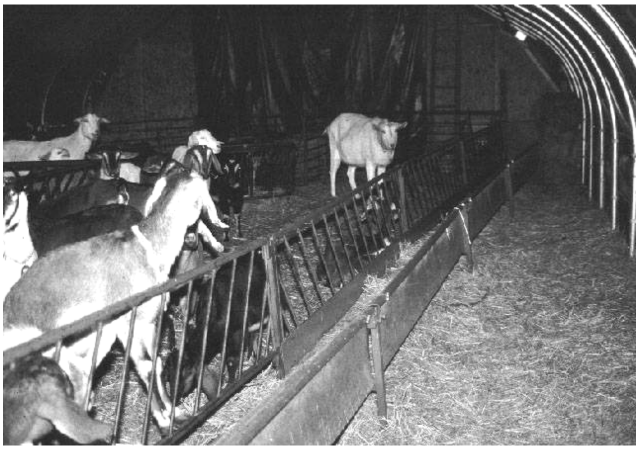




Fabric covered hooped structures can make low budget animal housing. They are flexible, moveable and let in sunlight.



Allowing feeding or access alleys along the sides of a hoop structure keep the animal away from the fabric walls.



Advanced planning is important in designing and building a new barn.

Design Considerations for Farm Buildings

Site .I

Access .A

Topography .B

Orientation to the sun and prevailing winds .C

Drainage .D

Area needed plus room for future expansion .E

Environmental concerns .F

Distance from other buildings .G

Soil Type .H

Utilities .I

II. Site Preparation

Remove top soil A.

Add a raised gravel base B.

Provide access roads C.

Install needed drainage systems D.

Lay conduits for running electrical wiring and E.
plumbing.

III. Foundation

Pressure treated posts. A.

Concrete slab B.

Concrete foundation C.

IV. Building Construction

Posts and purlins A.

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Design building to allow for mechanical cleaning with C. equipment.

Keep ceiling high for good ventilation and equipment D. accessibility.

Clear span trusses keep the building more open and E. flexible for other uses.

Keep all animal and equipment flow in straight lines, F. and avoid turns and narrow alleys.

Pole barns can be specifically built for goats.







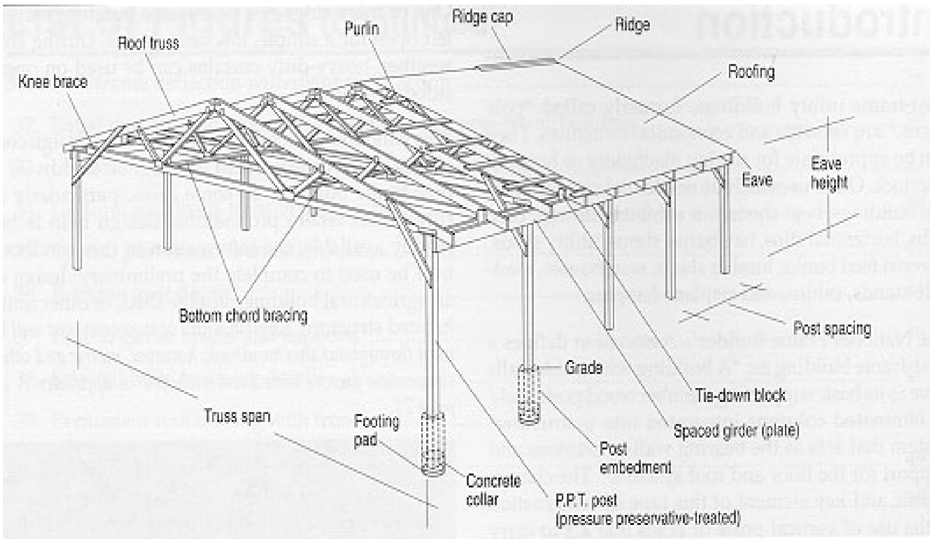


Pole barns are built with pressure treated posts and generally native lumber is used for siding and metal sheets on the roof.

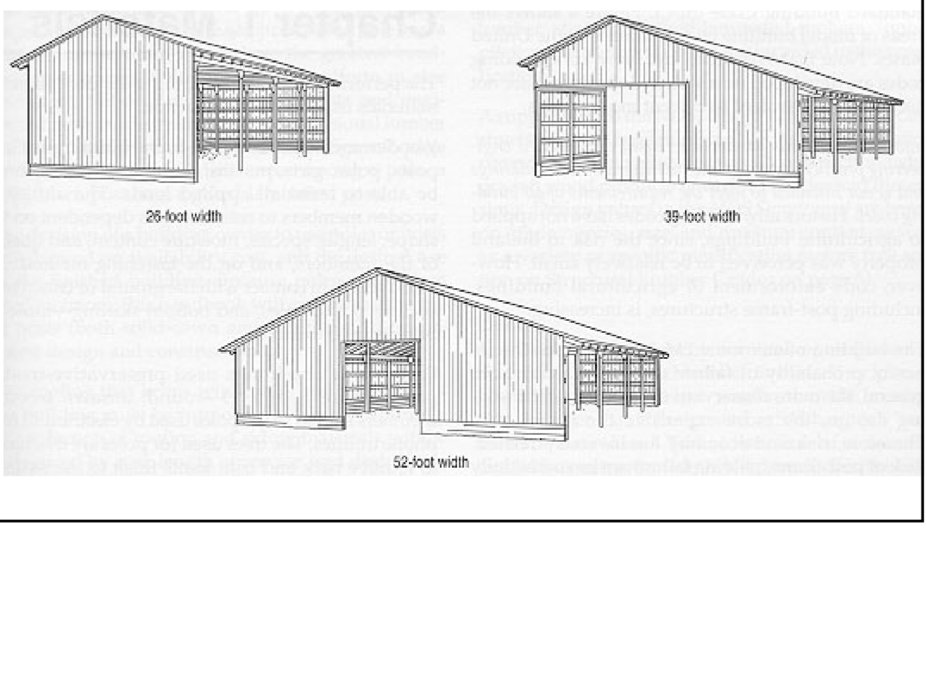




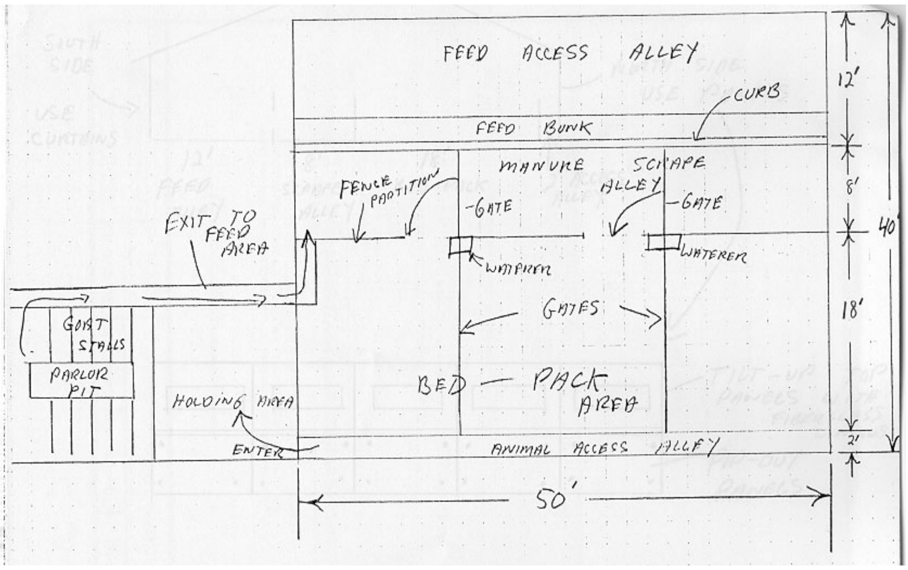
Post-frame building with trusses



Post-frame building width and configurations



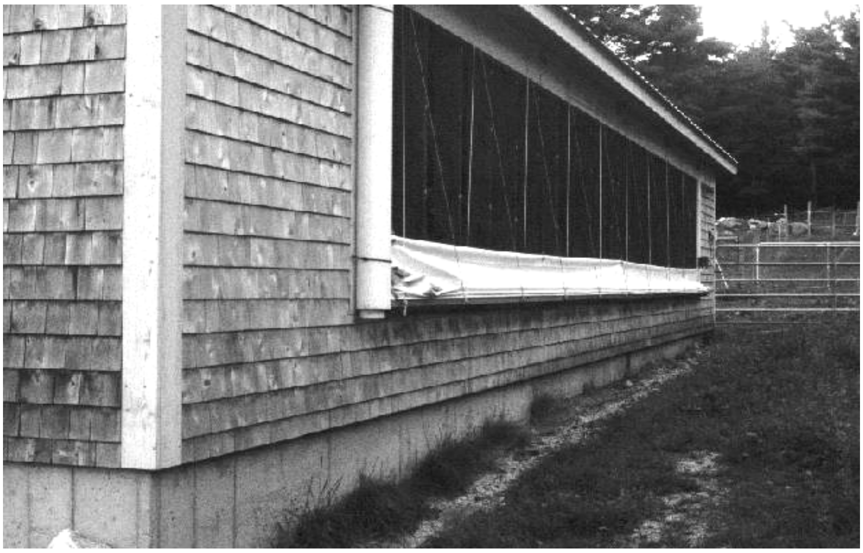
Design features of a custom dairy goat barn



Pole Barn

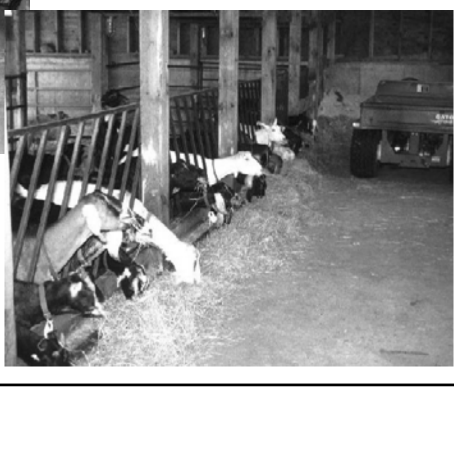


Curtain Side-Walls



Open Feed Access Area



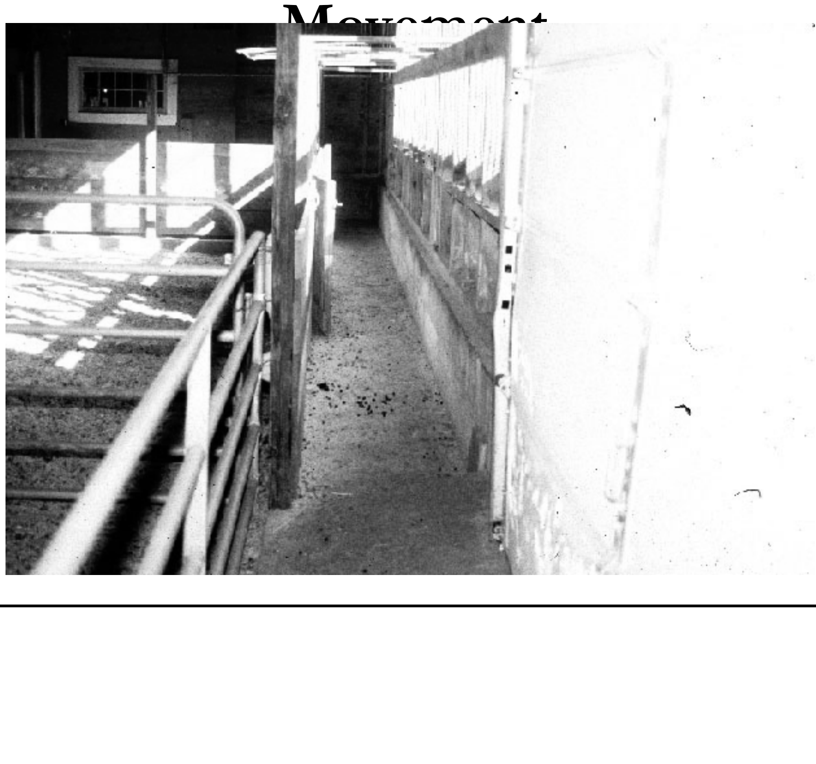


Separate Loafing & Feed Area

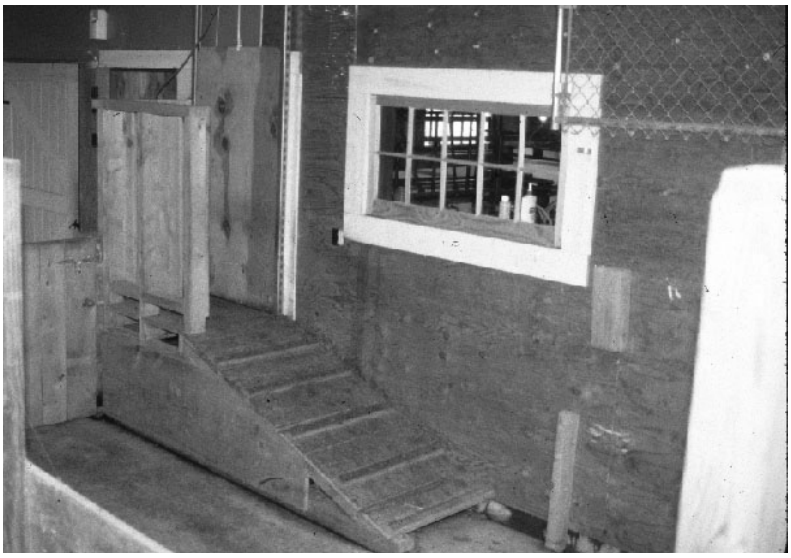




Access Alley for Animal Movement



Holding Area Outside Parlor





Should I castrate my buck kids?

Yes, if . . .

- You don't sell or cannot separate buck kids from their dams and female siblings by the time they are three months old.
- You are selling for kids for market projects or as pets.
- Your market discounts intact males.
- You want better growth rates in the late summer and fall.

Otherwise don't! ➔



Castration

- **Castration, stated simply, is the unsexing of a male animal.**
- **The practice of castrating males, in animal species used for food production purposes, is universally practiced and is probably one of the oldest surgical operations known to man.**
- **The purpose of castration is not only to prevent reproduction, but to improve the fattening and meat production capability and to make the animal more easy to handle.**

Methods of Castration:

- **Surgical:** involves cutting into the scrotum, removing the testicles and severing the spermatic cords.
- **Burdizzo:** instrument that crushes the spermatic cords inside the scrotum, thus stopping the blood supply, causing eventual atrophy of testicles.
- **Emasculator:** instrument designed to crush the tissue before it cuts them, and thus prevents serious hemorrhage.
- **Elastrator:** instrument designed to put a rubber ring around the testicles











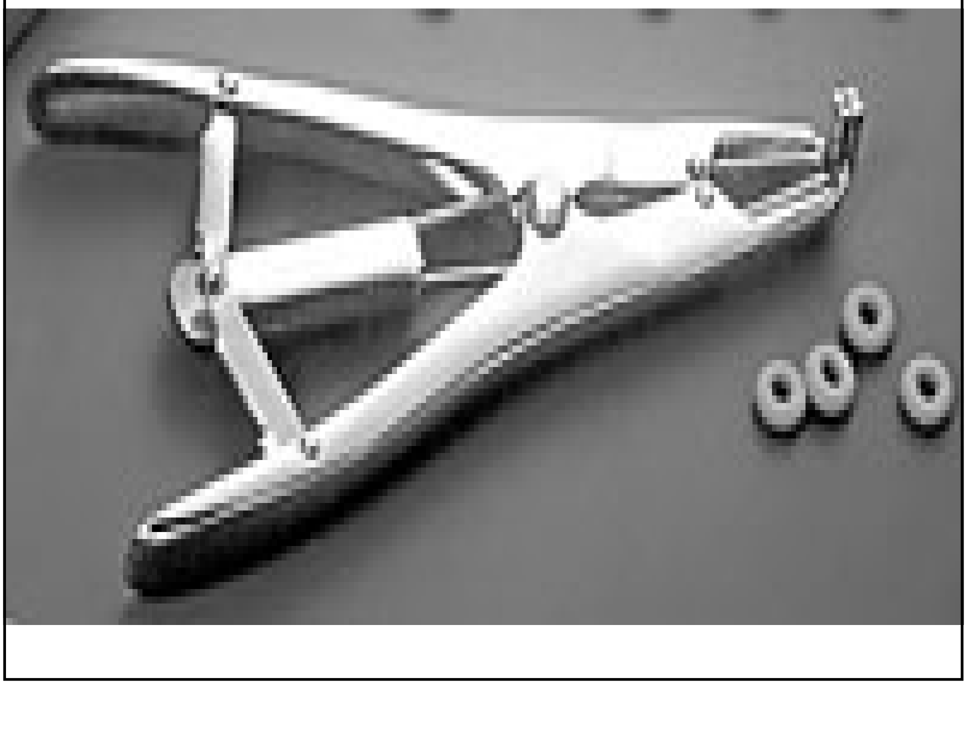
Castration













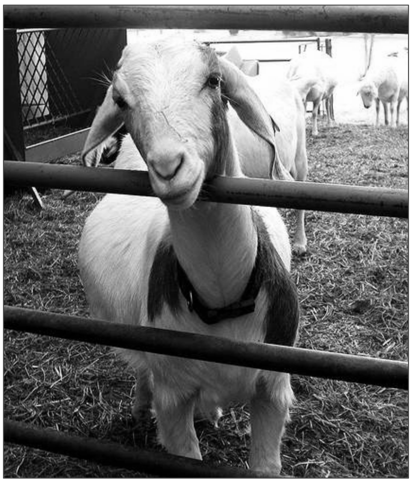
Tail docking





Should I disbud my kids?

- For dairy purposes
- For pets
- Wethers for show ???
  (depends on rules of show)
- As a personal preference
  - While individual goats can be restrained by the horns, disbudded goats are easier to work in a handling system, safer to handle, and less destructive to people, other animals, fencing, feeders, and equipment.
  - Disbudding is stressful to the goat.
- Most meat goat producers do not disbud.



Should I creep feed my kids?



Maybe, if . . .

- Milk production is a limiting factor.
- You have lots of multiple births.
- To go along with an early weaning program.
- Pasture is a limited resource.
- To get kids to grow faster.
- To improve fleshing and body condition of goats (grade and price).
- To improve resistance to parasites.
- To feed a coccidiostat.
- Only if it's economical.

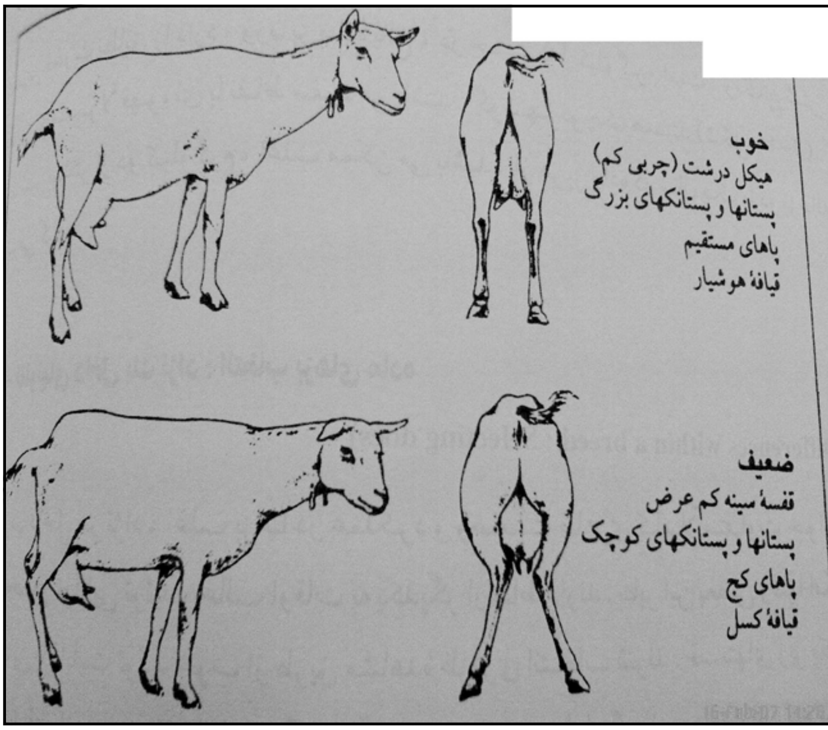
When should I wean the kids?

Early (60-90 days)

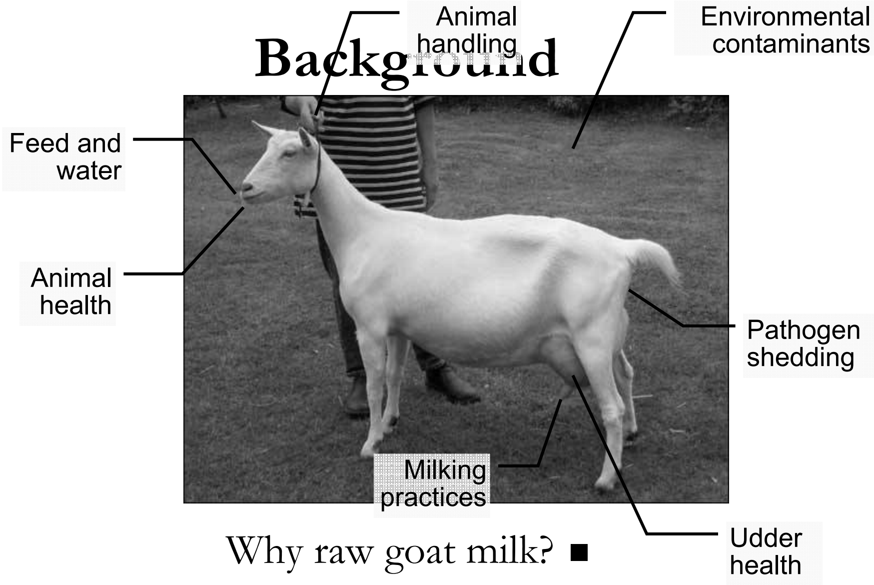
- Remove lactation stress from does to breed back earlier.
- Put weaned kids on better pasture or save pasture for more does.
- So you don't have to castrate buck kids.
- Focus internal parasite control on more susceptible kids.
- Mastitis risk

Late (4-6 months)

- More natural
- Less stressful
- Less risk of mastitis
- More economical pasture gains.
- Pasture-raised kids are more vulnerable to parasites and predators.
- Need to sell, separate castrate males by 3 months of age.
- Many does will rebreed while they are lactating.



Background



- Why raw goat milk?
- Current situation - permissions

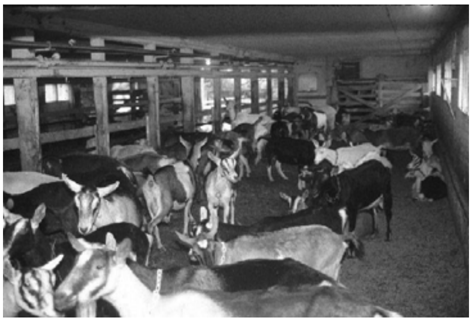




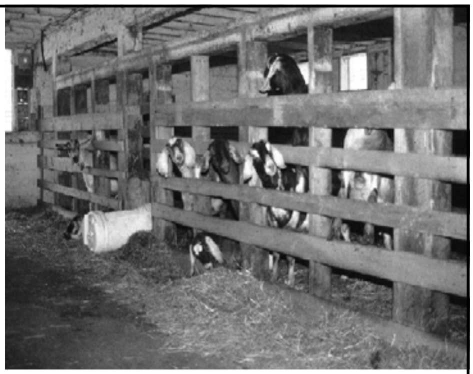
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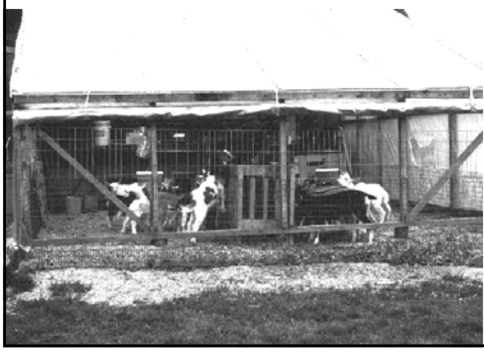
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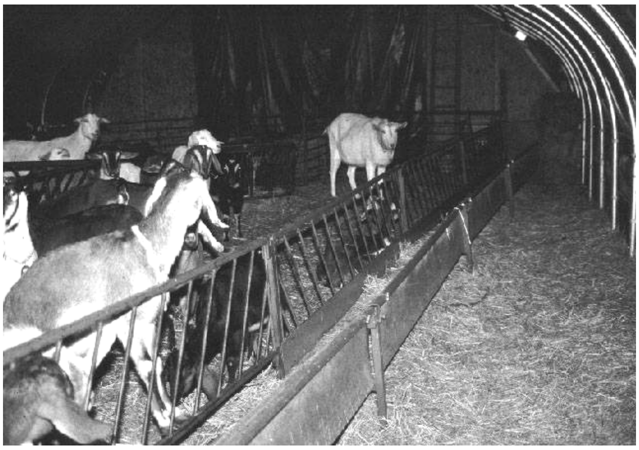




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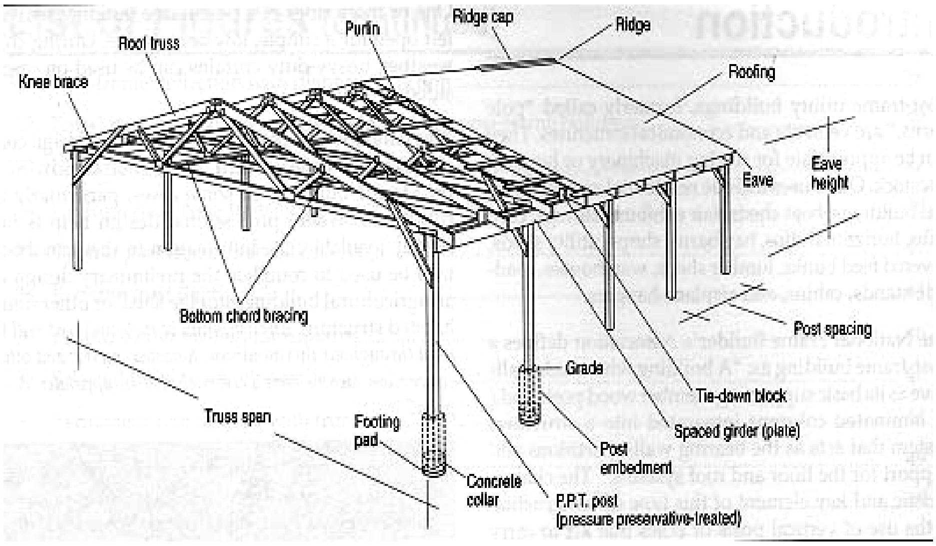


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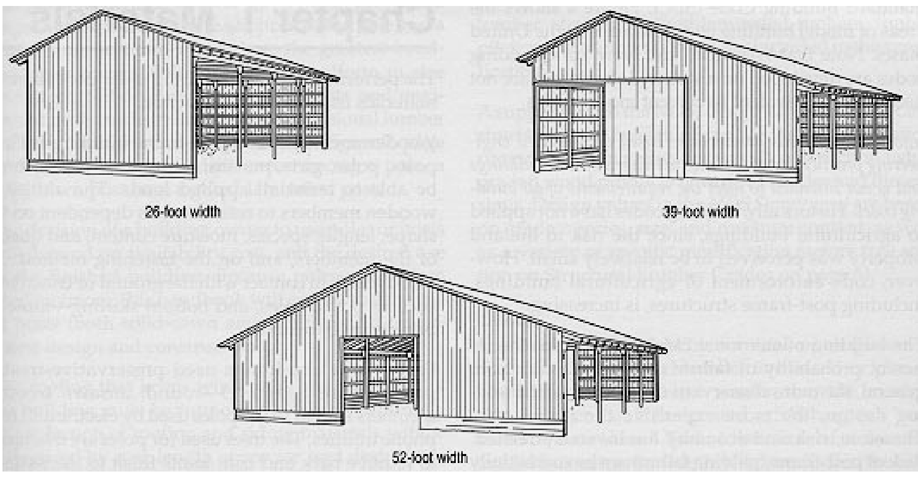




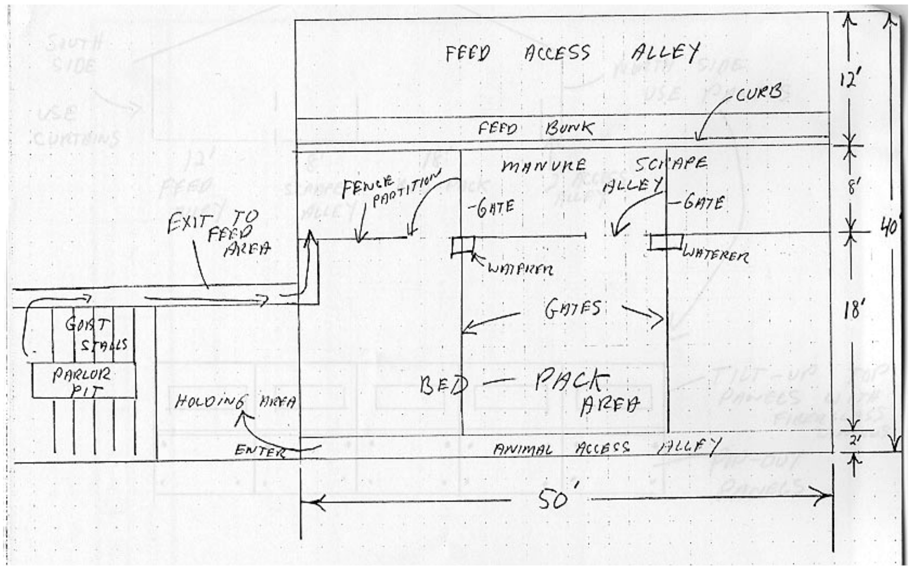
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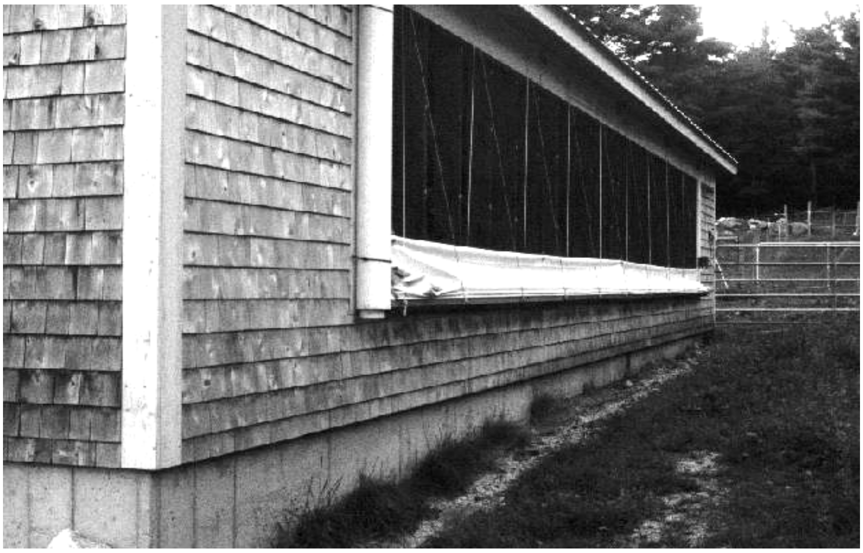
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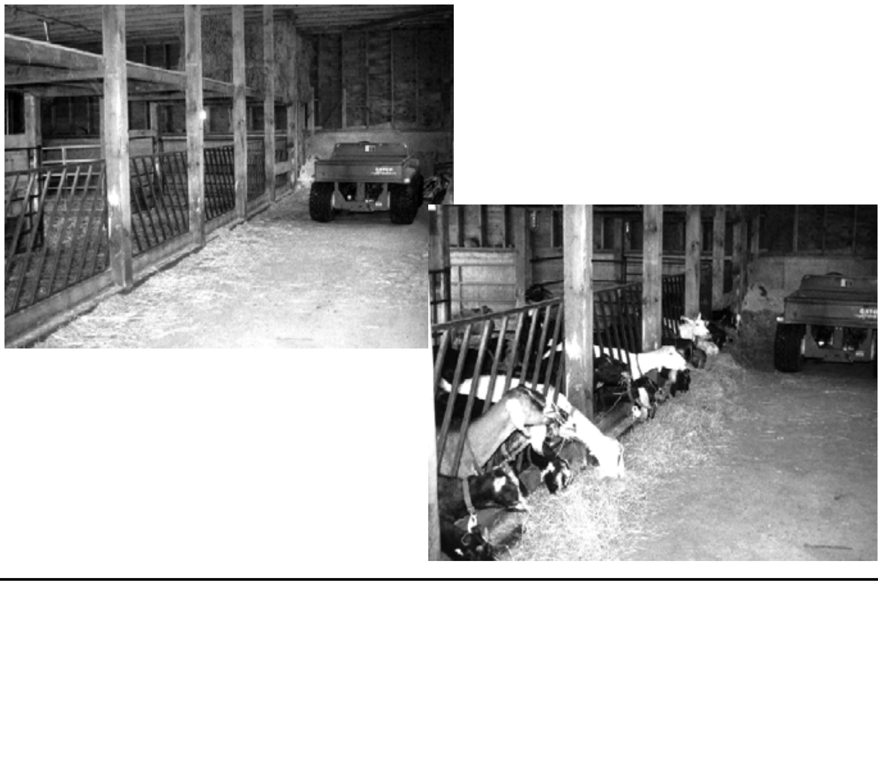
Pole Barn



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Separate Loafing & Feed Area

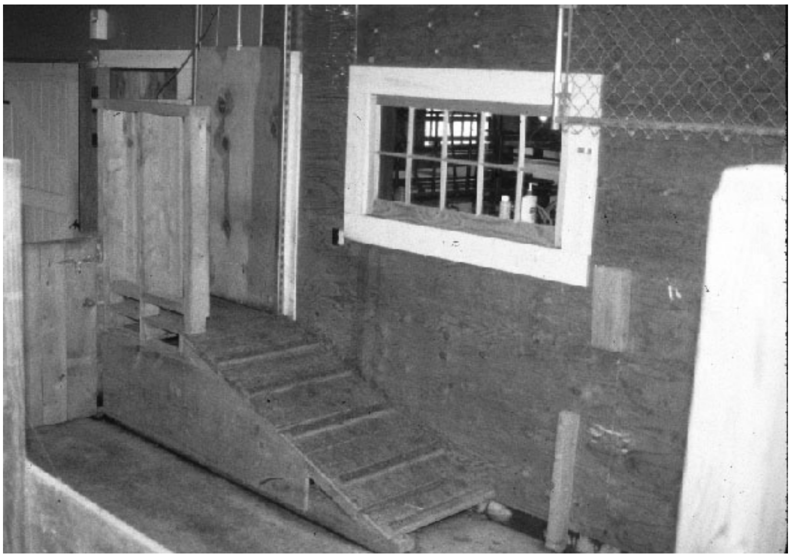




Access Alley for Animal Movement

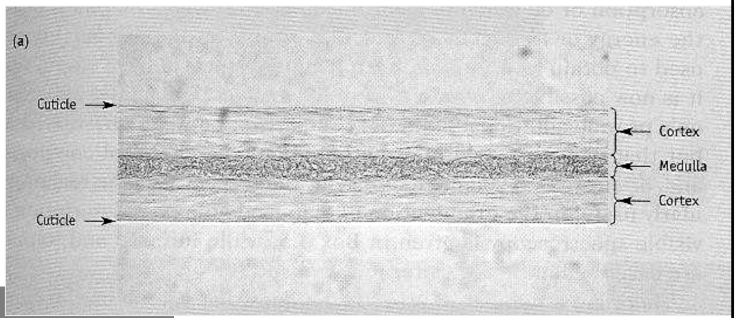


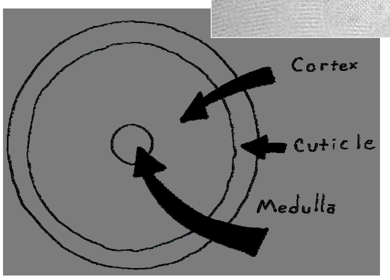
Holding Area Outside Parlor



Fiber production

Morphology and Structure of Hair





Morphology: Cuticle

- Protective coating made of overlapping scales, produce a characteristic pattern
- Scales always point toward tip of hair
- Not useful in individualizing human hair
- Can be used for species identification

Morphology: Cortex

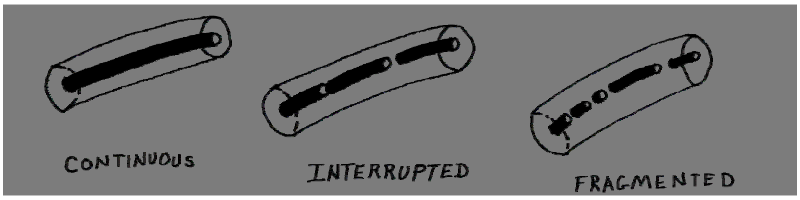
- Made of spindle-shaped cells aligned in a regular array, parallel to the length of the hair
- Embedded with pigment granules that give hair its color
- The color, shape and distribution of the granules provide points for forensic comparison

Morphology: Cortex (cont'd)

- In order to examine the cortex of the hair, it is suspended in a liquid with a refractive index similar to that of the hair.

Morphology: Medulla

- canal like structure of cells that runs through the center of the cortex



Medulla of Different Species

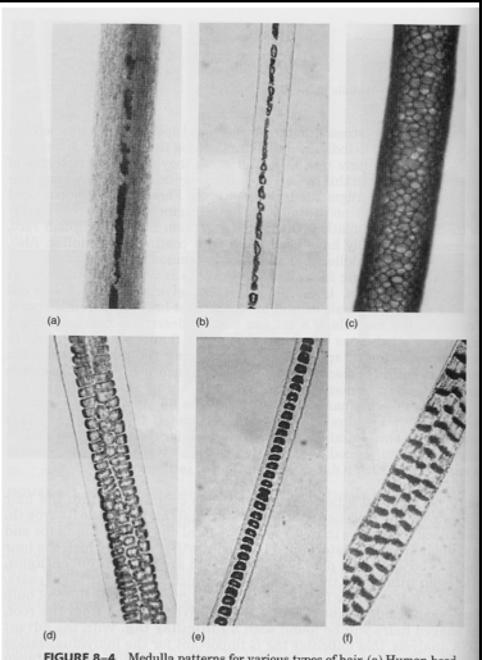


FIGURE 8–4 Medulla patterns for various types of hair. (a) Human head hair (450×), (b) dog (450×), (c) deer (100×), (d) rabbit (450×), (e) cat (450×), and (f) mouse (450×). *Courtesy Linda Jankowski.*

Goat improvement
&
breeding

Steps in genetic evaluation

- Define a breeding goal
- Measure traits related to the goals

Examples of breeding goals

- **Increased milk, fat, or protein yield**
- **Increased average daily gain**
- **Increased weaning weight**
- **Optimal birth weight**
- **Optimal litter size**
- **Improved conformation score**

Goats are raised primarily for profit and profit is dependent upon efficiency of production and market value

There are two basic tools ■ for genetic improvement in goats as well as other animals.

The 2 tools:

1 Selection

2 Mating systems

Selection = keeping ■ some animals and culling others

Bases or Selection : ■

1. Based on type or individuality
2. On pedigree
3. Show-ring winning
4. Production testing

Heritability estimates for goats

h2(%)	Traits
55	Age at first kidding
16	Multiple births
44	Weaning weight
63	Weaning at 7 months
50	Mature body weight
39	Milk yield per lactation
40	Fat %
62	Milking time
30	Mohair production
16	Fiber diameter

System of selection

Tandem Selection 1

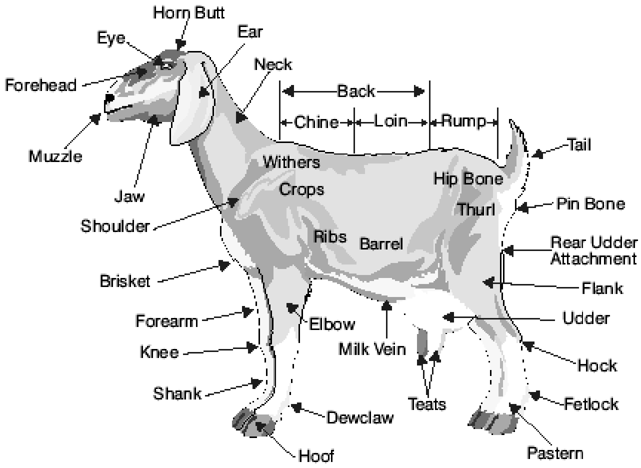
Minimum culling standards 2

Selection index 2

Mating systems

- Inbreeding
- Close breeding
- Line breeding
- Out-crossing
- Grading up
- Crossbreeding
  - Heterosis

External Parts of a Goat



External Parts of a Sheep

